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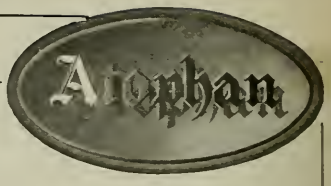

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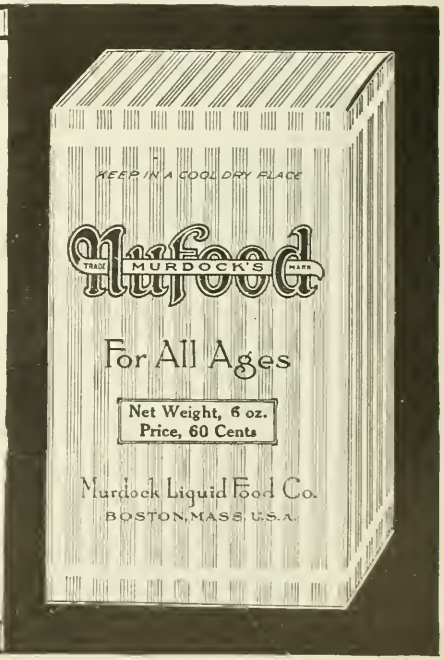

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EDWARD H. RISLEY, M.D. WILDER TILESTON, M.D.

MEDICINE.

CAN THE TUBERCULOSIS TRANSMISSION RATE BE REDUCED?

CUMMING, J. G. (*Jour. A. M. A.*, April 17, 1920) states that:

1. The attack against tuberculosis has not resulted in a marked reduction in the transmission rate because this attack has been made chiefly against the minor avenues of distribution.
2. A communicable disease can be successfully controlled and eventually eradicated only by an attack against the major avenue of spread.
3. The group of rinse water transmission experiments here presented gives a high mortality from tuberculosis and affords striking evidence of the importance of indirect transmission in this disease.
4. The results of the rinse water experiments, in conjunction with epidemiologic information, indicate that the major avenue of tuberculosis transmission is through eating utensils.
5. Eating utensil transmission is a three-link chain, the two end links are moist, and this makes for facility of transmission.
6. On the basis of "the theory of case and source elimination," by making the attack through the major avenue of transmission, tuberculosis is as controllable as is typhoid fever.
7. It should not be assumed that we should learn to live with tuberculosis, but rather that we should learn how to reduce the transmission rate.
8. Just as 99% removal of organisms from a polluted water supply controls the intestine-borne infections, so, likewise, will a similar reduction of organisms on eating utensils control the saliva-borne infections.
9. The universal application of the principle of eating utensil asepsis will accomplish more in the control of tuberculosis than will any other single measure of practical application.
10. In the control of tuberculosis, the adoption of the principle of boiling water as a cleansing and a pasteurizing agent of eating utensils applies especially to the small messing group—the family—and also, but to a less extent, to the public eating place.

[E. H. R.]

BOTULISM. PRELIMINARY REPORT OF A STUDY OF THE ANTI-TOXIN OF BACILLUS BOTULINUS.

DICKSON, E. C., AND HOWITT, B. M. (*Jour. A. M. A.*, March 13, 1920) draw the following conclusions from their very thorough study:

1. A true antitoxin may be prepared for the toxin of Bacillus botulinus.
2. There are at least two types of B. botulinus, which are distinct so far as their toxin-antitoxin relationships are concerned.
3. Experiments show that in the laboratory the anti-toxin may protect against the action of the toxin for at least 24 hours after the administration of one test dose of toxin, but that the effectiveness is, to a certain extent, at least, dependent on the amount of toxin injected.
4. For therapeutic administration a polyvalent antitoxin should be employed, and it should be given in large amounts and intravenously.

[E. H. R.]

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Original Articles.

THE DIAGNOSIS OF ACCESSORY SINUS DISEASE CAUSING LOSS OF VISION.*

BY LEON E. WHITE, M.D., BOSTON.

THE anatomy of the posterior sinuses and the relations of the optic nerves have been thoroughly investigated. The clinical histories of numerous cases have been reported and many theories advanced as to the etiology. The pathological findings, while not as complete as we would wish, seem to indicate three types of optic neuritis,—

1. Those due to a direct spreading of the inflammation to the sheath of the optic nerve from the foci of infection;
2. Those due to the toxemia from infection in the sinuses; and
3. Those due to hyperplasia.

It is not possible in all cases to determine definitely the type. Pus and polypi when present can usually be seen, but the hyperplastic type varies so little from the normal when the middle turbinate is not involved that macroscopically or even microscopically the diagnosis is most difficult. Hyperplasia has been defined by Vail as a rarefying osteitis associated with inflammatory swelling and fibrous thickening of the mucous membrane lining the accessory sinuses. It is brought about, according to Delafield and Prudden, by long continued hyperemia. That many obscure cases of loss of vision come from disease in the accessory sinuses and go on to optic atrophy, cases in which a correct diagnosis at the commencement of the neuritis might have saved the vision, is my excuse for again calling attention to this subject.

Many inquiries have been made as to what findings warranted the opening of the sinuses in optic neuritis. The ophthalmologist who sends a patient with sudden loss of vision, expects the rhinologist either to find or rule out disease in the sinuses. Where pus or polypi can be demonstrated or where there is marked blocking of the sinuses by a deflection of the septum or by hypertrophied turbinates, this is an easy matter, but only too frequently the nose appears normal. My second case was of such a nature. Everything was negative except the x-ray, which showed some anatomical abnormality in the sphenoids. Dr. William J. Daly on referring the case stated that optic atrophy would result unless the pressure on the nerve could be relieved at once, and it was at his most earnest solicitation and not on the nasal findings that I operated. The relief was so speedy and so evidently due to the operation

* Read before the New England Otological and Laryngological Society, on February 3, 1920.

that I became deeply interested and read practically everything to be found on the subject. Since then many cases have been seen. Some of these had gone on to optic atrophy, others were due to pituitary disease, but many were acute and the relief following the opening of the sinuses in such was most remarkable. In addition to the ophthalmological examination by the men who referred the cases practically all underwent medical, neurological, dental, Wassermann, and x-ray examinations. The danger of delay in making a correct diagnosis is well illustrated by Case 4. On the first examination a week after the onset of his trouble the vision was 20/50 right and 20/20 left. This dropped within six weeks while he was under investigation and before his consent to an operation could be obtained, to 2/200 right and shadows left, and the nerve heads turned white. If his sphenoids could have been opened before the development of the atrophy his vision would probably have been saved, especially as marked pathology was found in the sinuses when he was operated on at the end of the six weeks. When toxemia is suspected, its origin, be it teeth, tonsils, accessory sinuses, intestinal autointoxication, alcohol, tobacco, lues, etc., should be first investigated, but time is so very precious that needless delay is criminal. This investigation should not consume more than 48 hours. The possibility of pituitary disease must also be considered. To illustrate the necessity of excluding this, let me refer to a case which was sent to determine if anything further could be done for his progressive loss of vision. He had undergone a complete bilateral ethmoid and sphenoid exenteration. One glance at the enlargement of the pituitary gland as shown on the x-ray plate revealed the origin of the blindness. That there may be marked hyperplasia of the accessory sinuses with nothing in the nose to suggest it, has been demonstrated in several of the following cases. To give you the findings in these cases before operation, the condition found on operation and the final results, has seemed the most logical way of presenting this subject.

In Case 1 of chronic unilateral retrobulbar neuritis, one year's duration, with vision for fingers, pus was seen about the sphenoid in sufficient quantity to warrant advising its opening. The advice was not followed and the eye became permanently blind and involvement of the ethmoids followed.

Case 2 has already been mentioned. It was one of bilateral retrobulbar neuritis of one week's duration, vision 10/100 with slight blurring of the edges of both discs. Nasal examination negative. X-ray showed a difference in the sphenoids. The middle turbinate was removed and the sphenoid opened, no pus but hyperplastic tissue found. Complete recovery within two weeks.

Case 3 was one of acute unilateral retrobulbar neuritis of three days' duration with vision 20/40 following a severe attack of influenza. There was slight haziness of the margins of the disc and dilatation of the veins. The septum was moderately deflected and an enlarged and swollen middle turbinate completely blocked the superior meatus.

The nasal condition warranted the removal of the middle turbinate.

Case 4 has been mentioned.

In Case 5, of acute bilateral optic neuritis of two weeks' duration, the nasal examination was practically negative, as were also the physical, neurological, Wassermann, and x-ray. The right eye showed the disc pushed forward about two diopters with exudate on and about it. The retinal veins were enlarged and tortuous. The left disc showed marked neuritis but no swelling. Dr. Quackenboss, who saw the case in consultation, felt that unless there was immediate relief from the pressure, optic atrophy would result, so in spite of negative findings, the right middle turbinate was removed and the right sphenoid opened. The tissue was somewhat thickened, seemingly hyperplastic. Improvement commenced within 24 hours and although the right nerve remained somewhat paler than the left, vision eventually returned to 20/20.

Case 6, unilateral retrobulbar neuritis of five days' duration. Eye sensitive to pressure, marked blurring of edges of disc, light perception only. The septum was deflected to the left and the middle turbinate greatly swollen, evidently obstructing the sinuses. Nasal findings warranted the resection of the septum and removal of the middle turbinate. The sphenoid, owing to an infection, was not opened until some weeks later so that the vision did not return quite to normal—20/20—and there was slight pallor of the nerve.

Case 7 was one of bilateral optic neuritis of two weeks' duration with practically complete blindness in both eyes. The fundi showed

marked neuritis, swelling of the disc and dilatation of the veins. Nasal examination was negative, as were also the Wassermann, neurological, x-ray, and physical. In spite of the negative findings, both middle turbinates were removed and the sphenoids opened. This also was a case of hyperplasia. Sight commenced to improve within 24 hours and practically normal vision was eventually obtained, although there remained a slight pallor of both discs.

Case 8 was also one of bilateral optic neuritis of six weeks' duration, with blurring of both discs and marked neuritis right. Pituitary disease was suspected, which accounted for the delay in referring the case, but the neurological and x-ray examinations were negative. There was a slight deviation of the septum, otherwise the nose was negative. Having excluded practically everything but accessory sinus disease the right middle turbinate was removed and the right sphenoid opened. Although this case was of six weeks' duration, the vision returned rapidly, 20/20 left and 20/30 right in nine days. A diseased molar was later extracted and the antrum which had become infected from the tooth was cleaned out. Normal vision four months after operation.

Case 9 was most unusual as the patient entered the infirmary for exophthalmos of the left eye; it was pushed forward and outward but the sight was not impaired. Fogginess came on two weeks later and the fundus showed a commencing choked disc which grew rapidly worse so that within four or five days the vision dropped to 20/200. The physical, neurological, x-ray, Wassermann, and nasal examinations were all negative. The seriousness of the case warranted the removal of the left turbinate and the opening of the sphenoid and posterior ethmoid. Vision commenced to improve almost immediately and was normal in one month. Then pain and blurriness developed in the other eye. The fundus showed a marked papillitis and the vision dropped to 20/200, so that side of the nose was operated upon. In eight days the vision was normal. Later, following a severe cold, there was blurriness of the left disc, the first one affected, and the vision dropped to 20/30. Feeling that some infected cell had been overlooked in the first operation, all the posterior ethmoids were exenterated, the opening into the sphenoid enlarged and a permanent opening made into the antrum, which was found to be filled with pus. Vision became normal within a week. This case is unique as the optic neuritis of the left eye developed while the patient was under treatment for the exophthalmos on that side. The neuritis in the right eye came on some weeks after that in the left had subsided. Then there was recurrence of the neuritis in the left eye. This case seems to demonstrate that the optic nerve, while not in relation to the other accessory sinuses, may yet become involved from the toxemia of the infection,—the antrum in this patient.

In Case 10 there was neuroretinitis and choroiditis of the right eye of three months' duration, with complete loss of vision. The x-ray, Wassermann, neurological, nasal, and physical examinations were all negative. The operation was undertaken to determine what effect the removal of the middle turbinate and the opening of the accessory sinuses would have on the dilated veins of the fundus and the severe pain about the eye. This pain was of such intensity as to require large doses of acetylsalicylic acid almost hourly. Vision unimproved but complete relief from the pain. Granulations and pus were found in the ethmoids.

Case 11 was one of axial neuritis of eight months' duration. There was a large central scotoma for colors. Soft polypoid tissue was found in the region of the left posterior ethmoids, bleeding freely at touch and most sensitive to pressure even after thorough cocainization. Although the possibility of malignant disease was considered, it was not until the x-ray was seen that this suspicion was confirmed. The plate showed marked erosion in the sella turcica region. The clinoid processes were obliterated, ethmoid and sphenoid moderately obscured. No operation was attempted. The patient died some two weeks later. An autopsy showed that the sphenoid bone was almost completely pervaded by a round cell sarcoma. It had broken through the pharynx over a small area and extended into the greatly enlarged pituitary body. Although some of the polypoid tissue in the nose was removed the pathological report was negative. Dr. Verhoeff made sections of the optic nerves and tracts and found that the nerve showed no evidence of atrophy or degeneration, although there had been marked loss of vision (20/200) for eight months. Therefore, he said, could the pressure have been removed, the vision would probably have returned. This leads us to hope to relieve

cases of some months' standing, provided the nerve has not atrophied.

Case 12, unilateral neuritis of four months' duration, vision 20/70, marked swelling of disc, borders completely obliterated, retinal veins moderately full, tortuous and obscured at disc borders. There was a posterior deviation of the septum which crowded the left middle turbinate so as to obstruct the sphenoids and posterior ethmoids. The tissue in this region was distinctly boggy and mucopurulent secretion was seen about the middle turbinate. The x-ray plates showed left anterior and posterior ethmoids obscured and sphenoids rather hazy. These findings warranted the removal of the middle turbinate and the cleaning out of the ethmoids and sphenoid. The improvement was slow and vision was not quite normal when last seen.

Case 13 was one of bilateral optic neuritis of four months' duration, accompanied by severe pain in the head, dating back 15 years, but much worse the past six months. Vision 20/200 and steadily failing. High myopia. Both discs were irregular in outline and white on temporal sides. Nasal examination showed marked deflection of the septum and hypertrophied middle turbinates. Physical, dental, and neurological, x-ray, and Wassermann, negative. The findings in the nose were sufficient to warrant the removal of both middle turbinates and the opening of both sphenoids. The right sphenoid was filled with thick gelatinous secretion. The left contained thick mucus and reddened areas. The progress of the neuritis was checked, the vision improved slightly and the pain relieved.

Case 14, a child of five years, had bilateral neuroretinitis with total loss of vision for three weeks. The fundi showed stellate exudates and dilated veins. Neurological, x-ray, physical, and Wassermann all negative. There was a slight deviation of the septum high up and both middle turbinates were swollen. While this finding was comparatively slight, the fact that the case was treated a week without relief warranted the removal of the middle turbinates and the opening of the ethmoids. Light perception two days after the operation. In six weeks the child could count fingers at 20 feet, although there remained some pallor of the discs.

Case 15 was one of bilateral papillitis of four weeks' duration. Vision for fingers, one foot left and 20/40 right. Both discs were indistinct in outline, the left more so than the right. Physical, neurological, and Wassermann examinations negative. The x-ray showed right antrum and posterior ethmoids obscured. The left middle turbinate was somewhat enlarged and secretion could be seen beneath it. The x-ray and nasal examinations gave sufficient grounds for the usual operation. Pus under some pressure was found in the sphenoid. The patient improved but the final report was not obtained as he shortly returned to his home in another state.

Case 16 was one of unilateral retrobulbar neuritis with some optic atrophy. There had been progressive loss of vision for two years. Within a year it had dropped from 20/50 to 20/200. The x-ray, Wassermann, neurological, dental and physical examinations were negative. There was marked deviation of the septum to the affected side and the middle turbinate was tightly wedged between it and the outer wall, sufficient grounds, it seemed, for the removal of the turbinate and the opening of the sinuses. The mucous membrane lining these cavities was considerably thickened, quite evidently a case of hyperplasia. Slight improvement followed the operation.

Case 17, acute bilateral neuritis of one week's duration, vision 20/30 right and 20/100 left. Marked papillitis of each disc and general edema of the retina. Both middle turbinates were hypertrophied, the left especially obstructing the sphenoid. This was removed and the left sphenoid and posterior ethmoid opened; thickened tissue, but no pus. Vision returned rapidly and was normal in 5 weeks.

The following cases have not been reported:

Case 18, Mr. A. W. M., 36 years of age, was referred by Dr. Quackenboss on May 24, 1919, with diagnosis of unilateral retrobulbar neuritis of four weeks' duration, vision 20/100, slight pallor on temporal side of disc. Dr. Quackenboss feared that the condition was one of primary optic atrophy as the vision had failed rapidly in the week he was under observation.

The patient had a severe cold with pain through the forehead a week before the onset of the haziness. The usual examinations were negative. The septum was deflected to the opposite side, but the turbinate on the affected side was enlarged and especially obstructive. The position and size warranted its removal

and the usual opening of the sinuses. Thickened tissue was found—probably a case of hyperplasia. Recovery was rapid. Two weeks after operation vision was 20/30 and eventually became normal, although there remained slight pallor of the disc.

Case 19: Miss B. F., 60 years of age, was referred by Dr. C. F. Worthen on September 5, 1919, with diagnosis of acute unilateral optic neuritis of three weeks' duration, with vision fingers at three feet. The patient's other eye had been practically blind for some years. Fundus showed retinal veins engorged and disc moderately choked. It suggested Bright's disease but the urine was negative, as were the other usual examinations. There was, however, marked hypertrophy of the turbinate on the affected side, evidently obstructing the accessory sinuses. The findings in the nose warranted the usual operative procedure. The turbinate was cystic and the linings of the cells were somewhat thickened but did not contain secretion. Eleven days after the operation the patient had a rather severe hemorrhage from the middle turbinate region and was greatly exsanguinated, but in spite of this, the vision continued to improve. When she left the States some six weeks later, it was 20/70 and the disc appeared normal.

Case 20: Mr. G. G. P., 67 years of age, was also referred by Dr. Worthen on October 1, 1919, with diagnosis of chronic bilateral retrobulbar neuritis of four months' duration. The vision, which was 20/100 right and 20/70 left, had been slowly failing. The right fundus showed marked congestion. The nerve was hyperemic and the blood vessels dilated. Tobacco was suspected and after its discontinuance the vision began to improve slowly, so that when he was examined no operation was advised. Cocaine about the middle turbinate and hot irrigations caused a much more rapid improvement in his vision. When seen three weeks later, it was nearly normal and the congestion of the fundus had almost entirely disappeared. The patient remarked that every time he irrigated his nose it improved his eyesight and lessened the fogginess.

Case 21: Miss M. McG., 48 years of age, was referred by Dr. P. H. Thompson on November 13, 1919, with diagnosis of chronic bilateral retrobulbar neuritis. The trouble was of nine months' duration in one eye, vision fingers at four feet, and in the other the vision, which had been failing for three months, was 20/70. History of severe pain extending through eye to the occiput and roaring in the ears. The medical and x-ray examinations were negative. Dr. Coriat, the neurologist, reported that the case was probably one of atypical multiple sclerosis. Both middle turbinates were enlarged and obstructing. A diagnosis of probable disease in the posterior accessory sinuses was made and it was felt by Dr. Thompson and myself that these sinuses were the chief factor in the loss of vision, especially as multiple sclerosis itself has been claimed by Shumway, Stark, Parsons, Aurbach, and Brandt to be due to the absorption of toxins from the sinuses. The usual operation was accordingly performed on both sides. The pressure in the head and the roaring in the ears were entirely relieved. There was also a marked improvement in the visual and color fields. The case is still under observation.

Case 22: Mrs. H. B. M., 31 years of age, was referred by Dr. Derby at the Infirmary on November 26, 1919, with diagnosis of acute unilateral retrobulbar neuritis of seven weeks' duration. Following a severe cold, the right eye became blurry and at the end of the week was totally blind. There was considerable pallor of the nerve. The usual examinations all negative. The middle turbinate on the affected side was enlarged and obstructive. Other probable causes having been eliminated, the turbinate was removed and the posterior sinuses opened. In two days fingers could be made out close to the eye. The improvement, however, was only transitory. The pallor of the nerve increased and when discharged two weeks after the operation there was not even light perception. This case well illustrates how quickly the vitality of the nerve can be destroyed.

SUMMARY.

In seven the nasal examination was negative (Cases 2, 4, 5, 7, 8, 9, 10).

In six the x-ray findings were positive (Cases 2, 3, 4, 11, 12, 15). Negative findings, let me add, by no means contraindicate an operation. So many medical men feel that a negative x-ray rules out accessory sinus disease that I wish to especially emphasize the point that it does *not* necessarily do so, as these cases well illustrate. This is especially so in hyperplasia as only two

of the 13 cases showed any x-ray findings whatsoever.

The middle turbinate was removed in all the operated cases and the sphenoid opened in all but one (Case 3).

The posterior ethmoid cell is at present opened as a matter of routine. Unless suspected of infection, the other accessory sinuses are not disturbed. The complete ethmoid exenteration does not in most cases seem necessary.

In this review it has not been possible to give much pathology. Many specimens from the hyperplastic cases have been sent to the laboratory but the findings have been practically nil. As Dr. Verhoeff, the pathologist, says, the specimens are more or less traumatized in removal, and in decalcifying them, whatever changes that may have occurred seem to be destroyed. In other words, the changes that take place in the sinuses are so slight and elusive that it is practically impossible to detect them. In examining the noses in the later cases turbinates that might by their position or size prevent drainage have been especially noted. Whenever it has not been possible to pass a small cotton stick between the turbinate and the ethmoidal wall after cocainization, it was felt that they might be obstructive. The changes to be expected are only slight and I should not hesitate to operate upon a perfectly normal looking nose, if the symptoms were those of pressure on the nerve, after having reasonably excluded other possible causative factors.

Let me quote from Sluder's book Dr. Jonathan Wright's views on the pathology of hyperplasia:—

"It would probably be difficult," he says, "to find an adult individual in temperate or cold climates who does not present an example of this bone change within his nasal chambers, which we have a right to call pathological. It is only exceptionally that the symptoms to which it gives rise are sufficient to cause him to seek relief . . . . When in the walls of the sphenoidal or ethmoidal sinus there is involvement of the optic nerve in so far as it depends on bony pressure, blindness, partial or complete, is pretty sure to occur. When, however, the alarming symptoms of optic involvement are recent and slight, the trouble may not be due to a bony pressure, but to a pressure of soft parts, or to an extension of their inflammation, or of their vascular congestion. These latter conditions may be relieved by giving free drainage and ventilation to an occluded sinus; but in an inaccessible region, if there is pressure of a bony surface upon an optic nerve, it is difficult to see how the symptoms are to be relieved. Fortunately, there is good reason to believe that in the nature of things, the encroachment of the field of engorgement and soft hyperplasia upon the nerve structures gives a timely warning so that surgical interference is *possible before an irreparable condition results.*"

It is a well known fact that some cases of retrobulbar neuritis recover spontaneously. This is unfortunate in one sense as there is a tendency to wait so long, hoping to obtain this spontaneous recovery, that permanent injury results. In cases following an acute rhinitis where there is not complete loss of vision and where the pressure on the nerve is not so great as to endanger its vitality, one could wait a reasonable length of time before advising radical measures. The time, however, is so short where an operation can be of benefit that great judgment must be exercised in discriminating the types that might and might not recover spontaneously. I am hoping to obtain enough cases to draw some more definite conclusions on this line. Meanwhile it would seem the wiser course to err on the side of advising operations, possibly unnecessarily, than to permit one to become permanently blind through delay.

READY-TO-WEAR BRACES FOR STRAINED MUSCLES AND LIGAMENTS.

By H. W. MARSHALL, M.D., BOSTON.

THE plan herein proposed consists of employment of efficient mechanical splints which are used immediately after injuries as in treatments of fractures. Ideas of their proper applications will be illustrated from a single well-known variety, namely, strain of muscles and ligaments of the back.

With reference to back strains this method consists of preparation beforehand of numerous steel splints of various sizes, shapes, and degrees of stiffness sufficient to meet all requirements of varying statures and weights of patients. The prepared braces are bent as needed by means of wrenches when they are

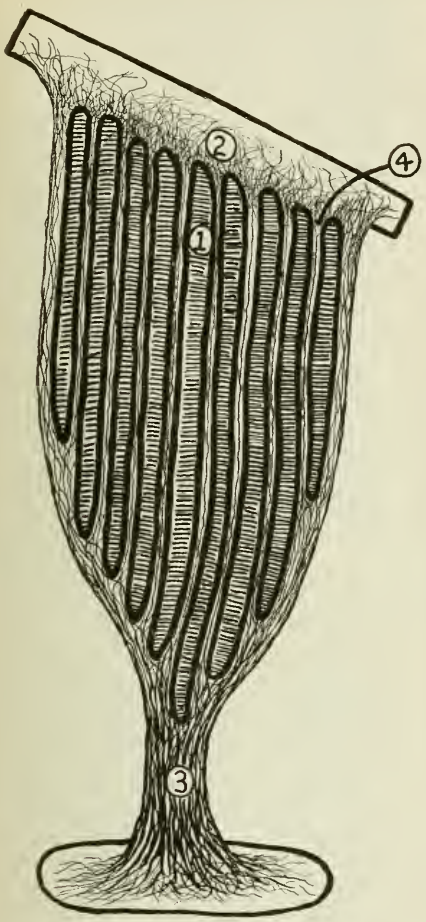

Fig. 1.

fitted to patients' individual peculiarities and curves; and they are applied quickly in order to avoid continued irritation to the damaged tissues from movements of the body subsequently to injuries.

Advantages are obtained by this plan which are not attainable by usual methods of strappings, pelvic belts, plaster casts, rest in bed, or special manufacture of individual braces; moreover, there are advantages of an economical nature arising from the possibility of using such prepared braces more than once.

Adhesive strappings do not immobilize spines most efficiently and they possess the disadvantage of hindering the use of local applications simultaneously at regular intervals. Rest in bed is extremely satisfactory in many respects, but there are possibilities still for unexpected new strains while patients are asleep, or from occasional injudicious movements which are bound to occur. Plaster casts are very effective methods of fixation, but are employed generally without simultaneous massage and exercises, and they cannot be used more than once. Individually prepared braces are open to objection because of delays encountered in their manufacture. Commonly they are put on after a number of weeks of unnecessary irritation which have developed oedematous changes and inflammatory reactions requiring comparatively long times for subsidence. It is often a just criticism of specially manufactured supports to say they are put on too late and are used at periods when muscles and ligaments should be limbered up instead of being stiffened further from prolonged immobilizations. Pelvic webbing belts do not prevent irritating pulls of back muscles above the pelvis on attachments of the latter into sacroiliac ligaments, and therefore are efficient mainly in binding the pelvis together more firmly.

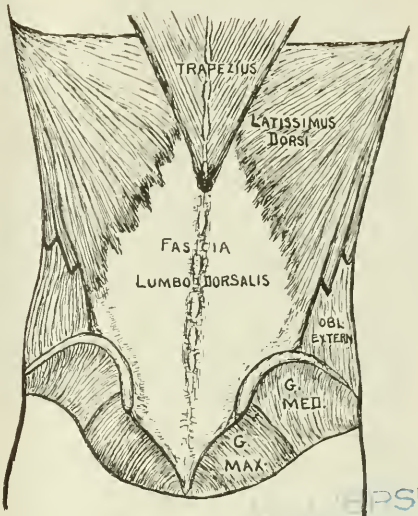

Fig. 2.

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Figure 1 is a schematic representation of a muscle with its insertions and attachments. Innumerable fine connective tissue fibrils (2) at-

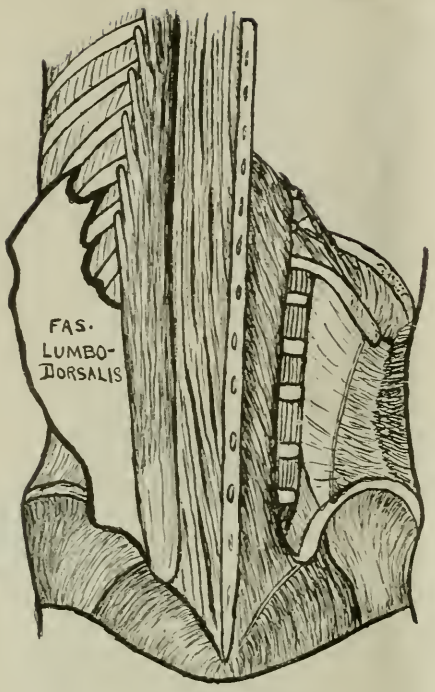

FIG. 3.

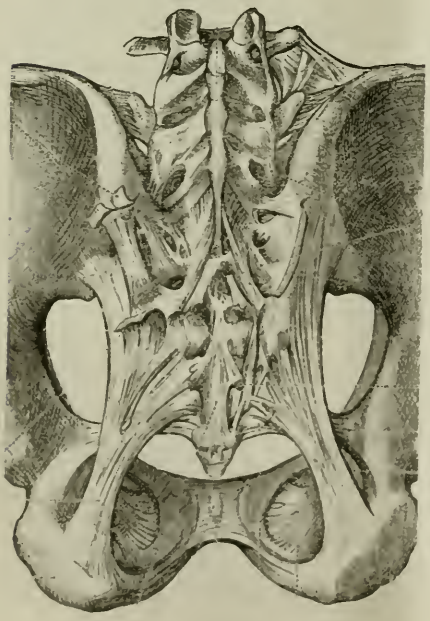

FIG. 4.

tach muscle fibres (1) to periosteum of bone or fascia where connections are intimate and extensive, while stronger bundles of connective tissue (3) fix muscle masses to smaller bony or ligamentous bases.

The outer connective tissue envelope of the muscle mass together with connective tissue septa between muscle bundles forms a framework for embedded muscle fibres that is continuous from one attachment to the opposite one at the other extreme end of the entire mass. These connective tissues check harmful stretchings of muscles much as woven thread coverings of rubber elastic cords limit the stretchings of the latter. Damage may be done to small areas of fine fibers at (2), or to coarse strong fibers at (3), or to delicate intermuscular strands at (4) depending on the nature of injury received. The problem of muscular-ligamentous strains thus is, to a large extent, a fibrous connective tissue problem.

There are possibilities of ruptures of capillaries in any of the regions just indicated with small hemorrhages into the connective tissues, as well as more slowly developing oedematous changes.

Figures 2 and 3 are introduced to recall to mind the multiplicity of muscle bundles that exist in lower regions of backs with their innumerable attachments and insertions into aponeuroses, ligaments, all spinous, articular, and transverse vertebral processes as well as to the pelvis and ribs. It is not surprising that some small attachments of muscles or ligaments of this extremely complicated system frequently are stretched or ruptured by various sudden forcible movements of the trunk.

Note especially in the left side of Figure 3 that the outer division of the erector spinae group of muscles, the ileo-costalis division, pulls strongly upward from attachments at the region of the posterior superior iliac spine. Sacro-iliac ligament fibers also are attached to the posterior superior iliac spine, muscular insertions and ligaments being closely blended, so that the strain of muscular pulls of the erector spinae group is borne to an important degree by sacroiliac ligaments and lateral ligaments at the lumbosacral juncture. Encircling pelvic straps do not relieve the strains on these ligaments caused by the pull of back muscles, and to insure most perfect rest the action of back muscles must be diminished by plaster casts or braces which limit back motions. It is a

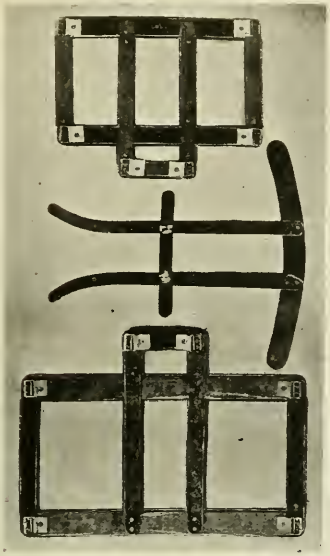

Fig. 5.

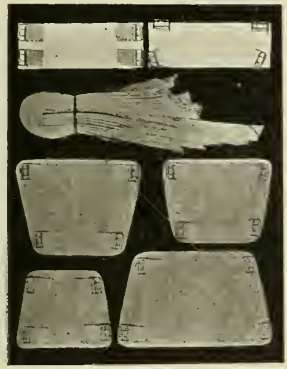

Fig. 6.

well known clinical fact that bindings of the trunk which put erector spinae muscles on stretch increase pain in the designated region.

Figure 4 is taken from an old edition of a foreign publication, Toldt's Atlas, and it illustrates very well the arrangements of ligaments at the extreme lower end of the spinal column, including lower lumbar vertebrae, sacrum, coccyx, and innominate bones. Attention is called to numbers, directions, and great strengths of many of these ligaments which bind the pelvis firmly together and attach the flexible lumbar spine securely to this fixed bony base.

Fig. 7.

Details of Construction of Prepared Back Braces.

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Figures 5, 6 and 7 show details of types of back braces which have been prepared by the writer in quantities for immediate use. There are in all 15 sizes, shapes and degrees of stiffness.

Two varieties are employed. The well-known spring steel back brace is used which has two vertical back steels, a pelvic band, anterior abdominal pad, and a chest pad that holds the upper part of the trunk with minimum restriction of the shoulders. The second type has four vertical back steels, as well as pelvic and thoracic horizontal steel bands, and abdominal and chest pads. These braces permit complete freedom of shoulders, yet restrict all motions of the lumbar spine to very considerable degrees, depending on stiffness of the steel framework. Different gauges and different widths of steel are employed, as well as different lengths and proportions in the assortment of sizes of braces. Figure 7 shows the parts of the second variety of brace assembled. A suitable variety of abdominal pads are made to care for variable abdominal developments, and all pads are attached to back splints by means of narrow webbing tape.

Details of Use of Braces.

Practical experience proves that patients welcome supports when discomforts of wearing the latter are less than discomforts of symptoms. Patients with moderately severe grades of

symptoms tolerate braces willingly during their active waking hours, but prefer to sleep without restricting supports. Patients with very severe grades of pain are benefited by continuous wear of braces night and day.

Some patients like supports for a few hours, then find them irksome, while with others there are difficulties experienced in persuading them to wear any apparatus at any time.

Certain ones express opinions as soon as braces are first applied that they would have been well if they had had these supports earlier.

Muscles and ligaments that are uniformly weakened without appreciable trauma through vascular defects are relieved by supports even when symptoms are slight. Symptoms from incompletely reduced dislocations of any of the numerous small joints are not relieved by braces to as great an extent usually, and the latter may increase symptoms by their restrictions. Practically, braces which are easily accessible are used very freely as therapeutic tests as well as for relief, from a few hours to several months, and features of situations are revealed quickly which are overlooked ordinarily without them.

Reactions of patients to their apparatus accordingly can be used with considerable accuracy in determining degrees of disabilities. And it is found that industrial malingerers who complain of very severe symptoms nevertheless will not wear supports that are relatively slightly disagreeable and restrictive.

Principles of use include having braces on hand already for any emergency that may arise. They should be employed only as long as physiological and pathological requirements demand, and the principle of using expensive supports until value is received for costs incurred should be condemned. Braces should be discarded as soon as possible and they should be used generally in combinations with internal medicines, exercises, massage, and physical therapy. Earlier and more vigorous exercises can be tried with safety when there are efficient means of support available immediately afterwards. Employed in the manner which has been indicated, braces furnish extremely important convenient therapeutic agents for influencing courses of back strains, but violations of physiological or pathological laws, with resultant greater harm than benefit, are possible easily from their improper, haphazard employment.

STRAINED MUSCLES AND LIGAMENTS OF OTHER REGIONS OF THE BODY.

The same principles of local protection, exercises, physical therapy, and correction of toxic blood conditions carried out in similar rational physiological ways underlie treatments of strains wherever they occur, notably in feet, shoulders, and knees, also in necks, hips, elbows, wrists and ankles. They apply likewise in presence of fractures and traumatic joint inflammations. Discussions of the special features encountered in each individual locality and of special splints, however, cannot be attempted in this paper.

The writer believes strongly from recent observations of treatments received by many patients that hope for greatest future improvements in medical care lie in better balanced judgments of entire situations and more skillful applications of numbers of familiar reliable therapeutic agents, as single methods never fulfill all requirements perfectly. The large accumulation of medical data at present is conducive to confusion, and while enthusiastic work along special lines enriches our knowledge, yet it does not increase efficiency of treatment necessarily as viewed from percentages of successes in any large series of cases. Substitutions of important new methods for valuable old ones only shift the scene of activity, whereas real progress is a constructive building onto previously established reliable methods.

The specialist who quickly discerns possible applications of his special methods and skilfully carries them out does his patients a service or harm according as he has impartially and correctly judged their entire problems. If he has quickly dismissed all matters not pertaining to his field, and has entirely forgotten familiar fundamental physiological facts, then his supervision may mean a misfortune to the people whom he is endeavoring earnestly to relieve, and whom he does assist in minor respects at expense of more important omissions.

SUMMARY.

1. Efficient braces should be on hand for early immediate use and they should be employed in physiological ways together with other therapeutic agents. It is easy to use them for too long periods and thus prolong disability and stiffness.

2. Other essential accompaniments of brace

treatments or complications of strains always have to be considered.

3. Toxic conditions of the blood should be treated immediately at the outset by appropriate simple methods. Vascular defects are features very commonly neglected in treatments presumably because they are so difficult of recognition.

4. Exercises, physical therapy, and local measures should be employed with proper consideration of well-known processes of repair of tissues which pathology has made known.

5. No single method fulfills all physiological requirements and the various ones should be combined with due regard to physiological needs of alternate rest and stimulation in various degrees and proportions.

6. Hope for greatest future improvements in treatments of strains seems to lie now in better balanced, more complete judgments of patients' situations rather than in special new methods. At present advantages of special treatments, although skilfully managed, often are overbalanced seriously by violations of familiar fundamental physiological principles of greater importance which are forgotten. Radical surgical operations upon strained injured joints especially are done unnecessarily frequently, and numbers of these surgical procedures probably will be diminished to important degrees when careful comprehensive impartial judgments are arrived at beforehand.

7. Condemnations of haphazard incomplete treatments of chronic strains should be as severe as condemnations of improper care of serious fractures, since disabilities resulting from the former frequently are more protracted than disabilities following bony fractures.

MOTION STUDY OF INOCULATING TUBES.*

By M. M. Canavan, M.D., Boston,

Assistant Pathologist, Massachusetts Commission on Mental Diseases; formerly Pathologist, Boston State Hospital.

A STANDARD method of inoculating culture tubes is presented with pictures showing details of arranging and placing the apparatus and the movements of the operator in inoculating tubes.

The major portion of the writer's technical bacteriological practice was performed at the Danvers State Hospital Laboratory under the direction of E. E. Southard, who was then (1906 to 1909) pathologist to the hospital. During that time extensive bacteriological research was done in post mortem bacteriology,[1, 2, 3, 4] epidemic dysentery,[5] endemic dysentery,[6, 7] and diphtheria.

This method was gradually and unconsciously evolved from pressure of work: technique will occur to anyone performing the same operation over and over in which the muscles gain an automaticity and mechanically assist the operator by traversing their paths, leaving the mind free for emergency or supervision, and would probably have been as unconsciously forgotten had not a "scientific selection" of a place for a summer vacation been made as a result of hearing Mr. F. B. Gilbreth read his paper on "Motion Models as a Method of Education," before the section on education at the American Association for the Advancement of Science, in Columbus, 1915. Mr. Gilbreth invited the section to attend the summer school in Providence and at this time (1916) micromotion studies of mechanical movements were made. An accurate study of the process here presented was pictured. Mr. Gilbreth commented favorably on the results,[8] which showed an average time of 24 seconds.

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APPARATUS.

With a clear flat space 28 x 16 inches, a bunsen burner, gas connection, matches, tubes of mother culture, empty wire baskets, a platinum loop, a sharpened pencil, sterile tubes of culture media, a small block for slanting one basket, a table or desk at appropriate height with chair to accommodate the operator, one can rapidly reproduce the setting for this work.

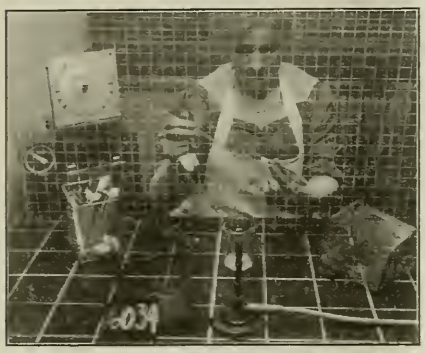
By following the pictures from left to right, the process and angle of holding tubes, the order of assembling, etc., are perfectly seen.

The gas burner at full height of flame is in the center directly in front of the operator, as is also the mother tubes in an ordinary glass tumbler. This differentiates them for all time and prevents mixing them with the sterile culture tubes (on the right in baskets) and with the freshly inoculated tubes on the left (slanting basket).

Between the center and the culture tubes on the right is an empty wire basket on top of which rests the platinum wire loop, No. 20

* This is one of a series of 15 papers (261, 1919.4) offered to Professor E. E. Southard in honor of the decennium of the Bullard Professorship of Neuropathology, Harvard Medical School.

gauge, fitted into a glass handle: this placing prevents it from rolling into the operator's lap or taking other excursions calculated to delay the proceedings, and it is near the height of the flame in which it is necessary to pause. Also a pencil lies on the table in this sector and a match box is at the base of the burner. To the left is a basket placed in a slanting manner with its opening toward the center of the semicircle of the field of operation (Fig. A).



SET-UP SHOWING POSITION OF APPARATUS ON 4-INCH BLOCKED TABLE, WITH SLANT OF NEEDLE AND TUBES SHOWN BY 1-INCH SCREEN.

THE CYCLE OF MOTION.

The cycle of motion consists in placing the mother tube in the left hand between the thumb and index finger, resting the free edge against the partly flexed second finger.

Next select a sterile tube with the right hand, to lie parallel to this tube; then twists are rapidly made of cotton plugs to make sure that they are free from the sides and are of proper snugness. Then the right hand picks up the glass rod, "flames" it by holding it perpendicularly to the gas flame and in it until the wire has a dull red glow, then passes it horizontally through the flame twice to rapidly sterilize without breaking the glass connection.

The next step consists of moving the left hand holding the tubes to the palm of the right hand, the little finger of which closes over the cotton in the tubes and holds the plugs firmly against the palm of the hand, at which time the left hand is separated from the right hand and the plugs are left firmly held away from possible contamination in the palm of the right hand, the thumb and forefinger of which support the loop which is cooling, since a red hot rod while sterile would cause great devastation of bacteria in the motor tube. The left hand approaches the open tubes to the flame, sterilizing their throats. The right hand holding the platinum loop, seeks a safe space behind the flame as the left hand pulls back the tubes and the platinum loop moves into the throat of the mother tube and gently rakes up some of the bacteria which is on the surface of solid media or which is caught up from the fluid media and with a slight turn of the left hand from the wrist, while the loop is withdrawn from the mother tube, the second tube is in position for the transfer of the culture and the throat of the sterile tube is entered and the bacteria deposited in the medium.

The tubes are again flamed, the stoppers replaced by one movement of the right and left hand reversing the withdrawal of the cotton. The right hand sterilizes the loop and lays the rod down over the top of the wire basket, swooping to the top of the table to pick up the pencil with which to write on the label the pertinent facts, after which a new culture tube is placed in the slanting basket to the left and a fresh tube is selected to begin a new cycle.

ADVANTAGES OF THIS METHOD.

1. Semicircular setting of apparatus conducive to greatest convenience.
2. Bare forearms prevents tipping by coat-sleeve or cuffs.
3. Elevation of platinum loop prevents its becoming misplaced and gives easy grasp.
4. *Pulling two cotton plugs by one movement and replacing by one movement* made possible by uniform distance between the tubes.

WHAT STUDYING A METHOD BY MICROMOTION TEACHES THE OPERATOR.

1. Necessity for having apparatus well arranged.
2. Desirability of maintaining standard conditions.
3. Incentive to improvement in technique.
4. Confidence in method.

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SPECIFIC AORTITIS.

By William D. Reid, M.D., Boston.

(Concluded from page 74.)

In our out-patient cases[2] there were two instances in which the Wassermann reaction was negative but became definitely positive while the patient was under antisyphilitic treatment. Among the fifty-four autopsy cases there were nine in which the test was negative in spite of the fact that at the necropsy, shortly afterward, definite evidence of syphilitic disease of the aorta was disclosed.

As bearing on this problem I shall quote certain statements made as regards the Wassermann reaction at the recent Atlantic City meeting. M. J. Rosenau[41] states that the Wassermann is a crude test, and in any series of cases the positive results may be dependent on the sensitiveness of the antigen used. Therefore, unless the Wassermann test be standardized, particularly as regards the sensitiveness of the antigen, the interpretations may be incorrect. Homer F. Swift, of New York, has said: "I would like to call attention to the paradoxical Wassermann reaction. If one follows the reaction with the two methods—the ice box antigen and the cholesterin antigen with the warm technic—one will often find cases which will give a positive reaction with one method and a negative reaction with the other. One cannot tell which antigen is going to give a positive reaction in a given case. Results from different laboratories have often given contradictory readings because of this very fact. It is important that both methods be applied.[41]"

If the blood Wassermann is negative Fontaine[9] believes that it is indicated to obtain the spinal fluid for cell count and Wassermann reaction. In my opinion it is questionable if it is worth while to do a lumbar puncture as the spinal fluid may also be negative and, if positive, merely evidences syphilis in the body but not necessarily in the aorta.

The luetin test is advocated by Brown[42] in suspected cases of aortitis which react negatively to the Wassermann test, but at present I am not resorting to it as I am of the opinion that this skin test has fallen into disfavor with competent syphilographers.

I have been induced to discuss the Wassermann reaction at the above length because there is a tendency to accept or deny the diagnosis of specific aortitis merely on a basis of the report of the Wassermann. I trust that in the above I have made it clear that it is unjustifiable to be guided absolutely by the report from the laboratory.

Roentgen Findings. The roentgen findings are the final data needed in checking up the diagnosis of aortitis. The interpretation of the plates is, perhaps, the province of the radiologist and I shall attempt merely to give some of the points thereon. Holmes and Ruggles, in their new book[43] state: "The dilatation as seen radiographically occurs most frequently as a result of specific disease. There may be a slight amount of dilatation present in arteriosclerosis and cases with high blood pressure.

"Specific aortitis tends to appear first just above the aortic valve and as the wall of the aorta becomes weakened, a bulging of this area takes place. On the plate or the fluoroscopic screen the position of this bulge is seen just above the shadow of the right auricle.

"A marked prominence of the aortic shadow to the right is almost always due to specific aortitis. In arteriosclerosis the calcified plaques in the aorta are not visible unless extensive. The tortuous aorta, however, does give a definite, fairly characteristic change in the appearance of the aortic shadow. There is a distinct, sharp increase in the upper part of the shadow to the left.

"Diffuse dilatation of the aorta also occurs and is seen as a general enlargement of its shadow. There is much more difficulty in interpreting this type from roentgen evidence, as the findings may be the result of the changes in the aortic curve already mentioned."

Elliott, in his excellent paper[6] devotes considerable detail to the roentgen findings in aortitis. Carman[44] also writes at length on this phase. Allbutt[4] states that a reduction of the pulsation and a deepening of the shadow are the only signs before enlargement, whereas

Elliott asserts that at first there is merely a doubtful dilatation of the first part of the arch with an exaggeration of the pulsation at this point. Later the shadow extends laterally beyond the outline of the right auricle. It is common to find some dilatation of the aorta in high blood pressure states, in nephritis and in arteriosclerosis.[6] In the main I do not feel that the x-ray can be relied upon in early cases (note the difference in statement by Elliott and Allbutt as regards the effect on the pulsation) as the vessel may not yet be definitely dilated or otherwise altered. Our Roentgen Department failed in three cases of advanced aortitis, one in 1912, one in 1915 and the last in 1918. In the 1915 instance the error was that of interpreting the findings as due to mediastinal tumor.

The custom of mensuration of the heart and aorta should be employed in all these examinations. The measurements, even if not yet diagnostic, might be of great value after some interval when another examination might show a definite increase in the width of the aorta. A rough rule, given me by R. D. Leonard, of Boston, is that if the width of the great vessels is more than half that of the heart the case is almost certain to be specific aortitis.

An increase of the size of the heart gradually appears whether there is aortic insufficiency or not.[6*] This affects to a much greater degree the long diameter than the broad diameter of the heart, which assumes a position more nearly horizontal than normal, the so-called 'boot-shaped shadow.'[6] In interpreting the measurements of the heart as obtained by radiography one should be familiar with the variations in the normal individuals and perhaps be guided by the rule mentioned above and given me by Leonard. Allesandrini[45] makes an ingenious use of the ratio between and the product of the longitudinal and the transverse diameters, and thus believes that by this method of interpreting the figures the case may be classified at once.

Sir Clifford Allbutt urges that the radiologist should also examine the case from an oblique or semilateral angle, of about 20 to 35 degrees. Elliott[6] reports a case of aneurysm missed in the antero-posterior views but finally detected by recourse to the oblique method.

In spite of its limitations in early cases the x-ray seems to produce the best evidence that can be brought to bear in the identification of these cases. I would urge, therefore, a more frequent use of this method of examination.*

Diagnosis. Though easy to diagnose in a typical and advanced case, luetic aortitis is almost impossible to diagnose in the early or latent type. The absence of clearly defined signs and symptoms in many cases probably accounts for the lack of attention paid to the aortic arch in the average physical examination.

One should consider syphilis in many case of cardiovascular degeneration of obscure origin. Every case of aortic insufficiency developing in an adult not giving a clear history of rheumatic endocarditis should at once arouse the suspicion of specific aortitis. Such a case warrants careful study and should be checked up by the Wassermann blood test and radioscopic examination. That so many cases are not diagnosed or at least suspected until the stage of dilatation, aneurysm, or valve defect is a reproach to our methods of diagnosis and shows our lack of appreciation of the prevalence of luetic aortitis.

The observation of syphilitic skin lesions, or some other mark of lues may suffice to turn a possible into a probable diagnosis of aortic syphilis. A definite history of syphilitic infection and a positive Wassermann reaction are of considerable value, but they may be absent. The x-ray, in all but very early cases, gives perhaps the most definite confirmatory findings. It is well to remember that Montgomery[46] estimates the occurrence of extragenital chancres as 5 to 10 per cent. of the syphilis in the United States, and Warthin[21] emphasizes the presence of congenital syphilis in adults so that the assumption of acquired venereal disease is not the *sine qua non* of the diagnosis of specific aortitis.

In my experience the occurrence of a little shortness of breath, perhaps some pain or discomfort under the sternum, or some evidence of cardiac weakness are the most likely points to draw one's attention to the aorta. If the patient is a young adult and there is an absence of a definite history of non-specific infection the diagnosis of aortitis becomes increasingly probable. Of course, if physical examination already gives evidence of definite dilatation of

* To check up this, my analysis of the cases without insufficiency of the aortic valve shows 15 in which the heart was hypertrophied and dilated. Ten of these had slight fibrosis of the aortic cusps, and of the remaining five, without involvement of the aortic valve, renal disease and mitral endocarditis may account for the enlargement of the heart. Thus but three cases with normal aortic valves showed hypertrophy though, in my opinion, mere aortic roughening is an inadequate explanation of cardiac hypertrophy

* While this article was in print a valuable article has appeared on "Roentgen-Ray Study of the Great Vessels," by C. L. Martin, Jour. A. M. A., 1920, Vol. lxxiv, p. 723.

the arch, involvement of the aortic ring, or a further complication of aneurysm, the diagnosis is simplified.

But it is in the earlier stage, the time when there is hope that correct treatment may prevent the occurrence of any permanent damage to the cardiovascular system, that every care must be used to make a diagnosis. It is only when all the facts have been collected that definite conclusions should be drawn and I feel that at times only a tentative diagnosis is possible. One's judgment may lead him to advise antiluetic treatment and to be influenced somewhat by the result of the therapeutic test. To-day a probable diagnosis may be the best that can be done but in six months, unless treatment has been instituted, the patient may have developed unmistakable evidence of the disease. There is then, may I repeat, no one point on which a diagnosis is to be made, but each suspected case requires careful attention to the history, especially to symptoms and physical examination, and is to be checked up by radioscopic examination and Wassermann test.

A study of the clinical diagnoses in the 54 cases which came to autopsy shows a gratifying success in diagnosis by the medical side of the Massachusetts General Hospital. In but three instances, where the specific aortitis was well marked and the primary cause of death, did the clinicians fail to note the affection of the aorta. Two of the three so-called misses, occurring in 1910, 1911, may be regarded as failures only in the sense that the presence of syphilis was not appreciated. There were five patients in whom the specific aortitis was well advanced but in whom some other affection was the primary cause of death and in each of these the aortitis escaped clinical recognition. In none of the twelve cases occurring on the surgical services of the hospital was the aortitis diagnosed, which to my mind, simply emphasizes that syphilitic infection of the aorta is, strictly speaking, a medical diagnosis. My study of the records convinces me that specific aortitis, if at all well marked and not obscured by some other disease, such as pneumonia, etc., can and is being correctly appreciated in life in our medical wards.

Differential Diagnosis. There are many conditions from which one must differentiate specific aortitis.

First let us speak of *non-syphilitic aortitis.* Rheumatic aortitis is perhaps the best known type. It, too, occurs in the first part of the aorta and may even cause an aneurysm but usually shows a tendency to recovery. Welch, quoted by Allbutt,[4] finds that in most cases it arouses no subjective symptoms; if signs there be they are unsought; and in a few cases subjective symptoms are present but ignored. Osler[47] writes that in rheumatic fever the aortitis may be serious. Klotz, Renou, Barié, Pawinski, and others[4] have reported this affection. Bennert[48] who collected 20 cases formulated the rule that aneurysm in children and in youths is a result of acute rheumatic fever. Allbutt reports cases in children of symptoms typically anginoid. In some cases no signs of valvular disorder could be made out and the pain had been attributed to the heart without making any examination of the aorta.

Influenzal aortitis needs but a brief mention. Mamorstein[49] found the bacilli of influenza in the aortic lesions. Fortunately, as pointed out by Kraus,[50] the symptoms and dilatation usually recede.

In malignant endocarditis verrucose aortitis has been reported.[4] There is ulceration and much inflammation at times, and some tendency to perforation. Perforation has occurred also in anthrax, in which case the bacilli were found (Oliver and Woodhead[51]) in influenza[4] and in a boy of six years with sepsis.[52] Non-specific aortitis has been reported in the suppurations, erysipelas, small-pox, typhoid fever, diphtheria, measles, scarlet fever, pneumonia, malaria, tuberculosis, and gonorrhea.[4] With these non-syphilitic infections I confess I have had no experience. As emphasized by Elliott[6] they are rare and happily have a marked tendency towards spontaneous recovery. The pathological differentiation may well be left to the pathologist. It is perhaps enough for us to realize the existence of these non-syphilitic infections of the aorta, and given a case of aortitis after one of the above infections, to consider the possibility of its non-syphilitic origin.

As *arteriosclerosis* in elderly patients is often combined with syphilis the determination as to whether both or simply one of the two processes are present offers full opportunity for one's best judgment. Pure atheroma rarely causes insufficiency of the aortic valve and practically never leads to aneurysm.[4] Allbutt further believes that pure arteriosclerosis rarely widens the arch so remarkably. Pain is present in but a small minority of arteriosclerotic cases. The

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gross pathological findings differ, particularly in that there are fatty and calcareous changes as contrasted to the fibrosis of syphilis. In practice I find that one is not confronted with the problem of arteriosclerosis when dealing with youths or young adults. It is in patients of perhaps fifty years or more, those who may give abundant evidence of arteriosclerotic changes in the peripheral arteries, that this point arises. The presence of symptoms, evidence of an aortic leak, much dilatation of the arch or the demonstration of an aneurysm point strongly to the presence of syphilis. The result of the Wassermann reaction, evidence of syphilis elsewhere in the body and a history of luetic infection are all helpful, but I believe the roentgen findings give us the most definite data on which to decide. I am impressed that the distinction is less important in aged patients, as the disease appears less active, and I doubt if antisyphilitic treatment will have as marked effect as in some of the younger victims.

Hypertension and chronic interstitial nephritis. Carr[53] points out that cases of hypertension, commonly regarded as chronic interstitial nephritis, have developed on a syphilitic basis. But, as regards aortitis, with none of its kinds has abnormally high blood pressure any concern.[1] Oberndorfer,[3] too, reports the systolic pressure as being normal unless the aortic valve has become insufficient. Elliott believes that syphilities are not exempt from blood pressure defects due to causes quite other than syphilis The roentgen findings as to the shape of the heart and aorta, should they prove typical, may settle the matter. Of course examination of the urine and study of the renal function, fundus examination, etc., are indicated in cases in which there is any doubt as to the integrity of the kidney.

Mitral lesions. The presence of organic disease of the mitral valve usually points to a rheumatic endocarditis and the insufficiency of the aortic valve may then be of non-syphilitic origin. On the other hand if the systolic at the apex be due to a relative mitral insufficiency, not infrequent in syphilis,[32] our diagnosis still stands. However, in 1909, Allen[54*] reported the finding of a positive Wassermann reaction in some cases of mitral stenosis, in which the fibrous circumference of the orifice proved to be thickened by syphilis, so that we cannot confine our suspicions to aortic disease. Thus in a few cases of mitral stenosis of obscure origin luetic infection may be at work. Warthin[21] however, states that he has never found syphilitic changes in the mitral valve. Sir Clifford Allbutt[4] emphasizes that, in heart disease of apparently other causation, occasionally it is found that the addition of antisyphilitic to other remedies may be of no little aid. In my experience one is assisted by the history; "apparently well until recently" and the absence of the story of an infection which might cause rheumatic endocarditis is not the story of a rheumatic heart.

While discussing the differentiation from mitral disease, which, it is seen, is usually non-syphilitic, I wish to introduce the summary of a case history, which was reported in 1917 by Furstenburg[55] in which the presence of an Austin Flint murmur at the apex presumably accounted for a diagnostic error.

Woman, age 29. History of severe attacks of acute articular rheumatism, each definitely preceded by tonsillitis and quinsy, at 17 and 22 years of age Had been in bed more than a month.

Heart. Apex 5th space. First sound at apex snappy, preceded by murmur heard only at apex, not transmitted. A low-pitched faint blowing, late systolic murmur at apex and faintly transmitted towards the axilla. In the tricuspid area of soft blowing, diastolic murmur was faintly heard. Pulmonic second sound accentuated. Radial pulse, regular, forceful, poorly sustained, tension somewhat plus.

Wassermann reaction negative, blood pressure 110 to 60, radioscopic examination shows aortic insufficiency.

Patient died suddenly, apparently from cocaine poisoning, during the operation for tonsillectomy, done in treatment of supposed rheumatic mitral endocarditis.

The autopsy findings were: congenital syphilis, diffuse interstitial myocarditis, aortitis, syphilitic spleen, aortic insufficiency and relative insufficiency of the mitral valve, and cardiac dilatation.

I believe that Furstenburg is to be commended for publishing this case report. In the presence of an aortic lesion, as pointed out by Mix[31] the examiner must be wary of accepting apical murmurs as organic. This case also illustrates the point that it may occasionally be necessary to diagnose syphilitic aortitis in spite of a strong history of acute articular rheumatism. I have recently met several cases in which much the same physical signs have been present, but in which the appreciation that I

* This article is quoted by Allbutt. I have been unable to read the original paper and obtain the evidence on which Allen makes his assertion.

was dealing with an Austin Flint murmur has permitted the diagnosis of syphilitic aortitis to remain unshaken.

Aortic insufficiency needs but little comment. It is one of the results of well marked luetic aortitis. Longcope[20] found that at autopsy 81.5 per cent. of an uncomplicated series were specific, while Larkin and Levy[56] go as far as to state that pure aortic insufficiency is always syphilitic, except in infective endocarditis. We report here that regurgitation through the aortic valve is rare in pure arteriosclerosis. Grau[57] points out that as a rule cardiac compensation is less well established in syphilitic aortic insufficiency than it is in insufficiency of non-specific causation.

Aortic Stenosis. Mix[31] devotes some space to the distinction between aortic stenosis and specific aortitis, and while in the main I agree with him that, given the presence of true stenosis of the aortic valve, the diagnosis is not cardiovascular syphilis, still the case report of syphilitic aortic stenosis I have quoted above, (in the section on pathology) makes it evident that even this rule is not infallible. In what little study I have made of the literature I have not noted any other case of aortic stenosis of syphilitic origin nor of any other writer than Mix who is so positive that true stenosis is absolutely contrary to the pathology of syphilis. In aortic stenosis there are the three diagnostic criteria of von Leube [31], *i. e.* (1) loud, sawing systolic murmur transmitted upward into the neck, (2) systolic thrill over the second right interspace, and (3) absence of the aortic second sound. And finally Broadbent has added the characteristic pulse—*pulsus tardus et parvus*. The systolic over the aortic area is commonly softer and the thrill, if present, is as a rule less marked in aortitis as compared to stenosis. I note in the case of apparent syphilitic stenosis, quoted in the section on pathology, that the aortic second sound (as happens rarely) was retained. The history of an infection such as rheumatic fever should strengthen the diagnosis for non specific stenosis. When still in doubt the Wassermann test may help and finally in an advanced case, such as most of those in which the problem of stenosis or aortitis arises, the roentgen findings should disclose the syphilitic process if present.

Aneurysm does not truly form a part of the differencial diagnosis of syphilitic aortitis as it is simply a complication of that affection. I have not devoted much space to aneurysm in this paper as any adequate consideration of the same would require undue extra space. I would suggest that the detection of some of the many pressure signs and especially the roentgen examination may disclose the presence of an aneurysm. Cabot notes[34] that in one half the cases of sacculated aneurysm there are no sounds or murmurs over it. It has been pointed out by Allbutt[4] that cases in a sanatorium for tuberculosis have not infrequently first been correctly diagnosed specific aortitis and aneurysm as a result of a roentgen examination.

Tumors of the mediastinum may at times offer some difficulty in differentiation, but I believe that a careful study with a consideration of the data present, and especially the roentgen examination will almost always distinguish between aortitis and mediastinal tumor. G. T. Herbert[58] believes that the combination of signs of mediastinal pressure and pulmonary involvement is almost diagnostic of neoplasm.

Tabes dorsalis hardly needs differentiation save as regards the so-called cardiac crises in tabetic patients. Moore[7] believes the cardiac crises to be anginal attacks from the syphilitic infection of the coronary arteries. Allbutt[4] is more conservative in stating that in general, in well-advanced tabes, anginoid symptoms are more apt to be cardiac crises. With tabes latent and the aortic disease well-developed, seizures will more probably prove of true cardiac origin. He finds aortitis to have a longer period of latency than tabes dorsalis.

It is of interest, however, to note the frequency of aortitis in tabetic patients. Thus Chiari, Straub, Deneke, and others found the vascular disease in about 40 per cent. of the cases with tabes, but Stadler, quoted by Elliott[6], found aortic disease in almost all cases of manifest tabes.

Prognosis. On the whole the prognosis of specific aortitis is grave, perhaps because of the tendency in many cases to the progressive impairment of the integrity of the aortic cusps with resulting regurgitation through the valve and decompensation of the heart. Meeker[59] points out that aortitis of the chronic type may suddenly end in angina pectoris. Aneurysmal changes develop in not a few. Longcope[60] found an aneurysm in 43 cases of aortic insufficiency. Elliott[6] asserts that 30 per cent. develope aneurysm and about the same percentage sclerosis and retraction of the aortic valves.

Lenz, quoted by Elliott, states that in large cities such as Hamburg, Germany, 25 per cent. of all syphilities die of aortitis and its consequences, as against 3 to 4 per cent. from paresis, 1 to 2 per cent. from tabes dorsalis, and 10 per cent. from all other forms of internal syphilis, as of the brain, liver, stomach, lungs, etc.

Considerable depends on the amount of damage already incurred before the diagnosis is established and treatment instituted. Thus if insufficiency of the aortic valve has ensued, serious mischief has been achieved. Cardiac decompensation especially if advanced to the stage of edema of the lower extremities always offers a poor prognosis.[31] Arhythmia appearing in aortic regurgitation has long been considered of bad prognostic import and to-day we know that Warthin has demonstrated the cause to be myocarditis directly due to the treponemata.[31]

In my study[2] of the cases under treatment at the Massachusetts General Hospital I concluded that intensive antisyphilitic therapy is now being administered with promising results, but the data are too limited to warrant any very positive conclusions. As noted by various observers, whose reports I have consulted, the improvement is in symptoms and not in physical signs. Thus I found no record in which there was definite evidence of diminution of the dilatation of the arch or lessening of the evidence of valvular impairment. An understanding of the pathology of syphilis of the aorta makes it easy to comprehend why aneurysm, aortic insufficiency, etc., cannot be removed; but if an arrest of the disease can be achieved it is worth striving for. This is somewhat analogous to the problem of pulmonary tuberculosis in many cases of which, perhaps in most cases, an arrest of the disease is all for which it is reasonable to hope.

As compared to the specific type, rheumatic and other non-syphilitic aortitis have a much brighter outlook. Allbutt[4] notes that recession of the dilatation generally does take place, whereas he has no recollection of its occurrence in any appreciable degree in syphilis. He puts the probable length of life as 2 to 3 years in syphilitic aortic regurgitation as contrasted with even 20 or more years in that of other etiology. Thomas[31] estimates the usual length of life after the onset of symptoms as 1 to 2.5 years. Bailey,[18] on the other hand, believes that many non-syphilitic cases of small dilatations and aneurysms of the aorta may in later life prove a menace to the health of the individual. It would seem reasonable, if the integrity of the aorta was much affected by a specific or a non-specific infection, that this aorta might at some future time yield to the wear and tear of life to a degree that would not occur in an aorta never infected. Much importance must lie in the amount of damage incurred at the time of the acute infective aortitis.

Treatment. We have seen that syphilitic disease of the aorta is caused by the spirochetes in the aortic tissue. Therefore it is logical that treatment, to be effective, should, primarily, be directed towards destroying the spirochetes as quickly as possible. Experience in the past[4] has shown that mercury has considerable beneficial influence, and since the introduction of salvarsan and allied arsenical preparations evidence is accumulating that this type of remedy is also of value in the treatment of aortitis. In studying the cases treated in our out-patient department I have been strongly impressed[2] that the group given diarsenol in addition to mercury have shown more evidence of benefit. The length of life, even in cases of a comparatively advanced type, has been about three years to one in favor of those receiving modern intensive antisyphilitic treatment.

According to Brooks and Carroll,[62] and others, antispecifics should, irrespective of a negative or positive Wassermann reaction, be administered from time to time throughout life. It is capable of greatly improving the symptomatic comfort of patients, and even if this were all of which it were capable, its guarded yet vigorous employment would be justified. Allbutt[4] advocates that, when in doubt as to whether the case is truly of specific origin and therefore there is the question as to the employment of antisyphilitic treatment, it is better to err on the positive than on the negative side. In my opinion the wisdom of applying a therapeutic test cannot be too strongly emphasized. And especially in the early cases it is that the diagnosis may be in doubt; delay here until the diagnosis may be evident even to the sceptical may mean the loss of the best opportunity to check the disease and preserve for the patient a cardiovascular system of which the integrity is but little impaired.

In angina pectoris which we have seen is commonly closely allied if not part of an aortitis, Elliott[6] reports relief from small doses of salvarsan and recently Josué[63] states that there

were no further anginoid attacks after antispecific treatment in 90 per cent. of his 9 cases, although the Wassermann was positive in but 33 per cent. Josué, however, prefers the use of mercury without salvarsan.

In view of the favorable reports from many clinics of full antisyphilitic treatment I am surprised to note that Hirschfelder[32] is rather unfavorable to the use of the arsenical preparations in the therapy of aortitis. He gives a careful account of the use of salvarsan in syphilis and notes that a fall of blood pressure amounting to 25 to 45 mm. of mercury has been recorded after its administration. Wechselmann, however, studied this problem and noted that the fall in blood pressure rarely occurred if the dose of salvarsan did not exceed 0.5 gm. In our out-patient clinic these cases are being treated by alternate courses of mercury and diarsenol, in which the dosage of the latter varies from 0.15 to 0.45 gm. and it is rare that any ill effects are produced. Presumably this is the more correct method, but I may well leave further discussion of this point to the syphilographers.

Potassium iodide is administered by mouth and, in my opinion, is of much less certain value. It probably, in view of our knowledge of the presence of the spirochetes directly in the aortic lesions, is little indicated save in the late cases of syphilis.

One further point in the treatment as regards treatment remains to be mentioned, *i. e.* that in cases in which there is any evidence of cardiac disturbance such as failing compensation, standard cardiac therapy,—digitalis, rest, etc., is indicated. There is nothing peculiar to the principles of this form of treatment in specific aortitis as compared to cardiac disease of other causation.

Conclusions. Syphilitic disease of the aorta is one of the most common and most serious findings in all cases of acquired syphilis.

The lesion is essentially a mesaortitis, and a manifestation of active syphilitic disease; its conception as a parasyphilide being made untenable by the discovery in 1906 of the spirochete directly in the aortic lesion.

The aortic process frequently extends to the aortic cusps, and Warthin has shown that relatively often there is an accompanying myocarditis of spirochetal origin.

Aortic roughening, aortic regurgitation, dilatation or aneurysm of the aortic arch, and angina pectoris are common in syphilitic aortitis.

Aortic or mitral stenosis is of exceptional occurrence in connection with specific aortitis.

Non-syphilitic forms of aortitis are rare.

Many cases may be called latent in that symptoms are absent. Such cases are commonly undiagnosed until disclosed, perhaps, in a routine roentgen examination.

There is no one point on which a diagnosis should be based, but only after a study of all the facts in a given case should a decision be rendered.

Every case of cardiac disturbance of obscure origin, especially if the patient be a young adult and if there are signs of involvement of the aortic valve, should promptly suggest the probability of syphilitic causation.

A positive Wassermann reaction is of confirmatory value but is frequently absent.

Roentgen examination, though unreliable in early cases, gives perhaps the most reliable findings.

Specific aortitis evidences a tendency to progressive impairment of the heart and aorta and is, therefore, of serious import.

Treatment should be directed primarily towards killing the spirochetes in the aortic lesions. Decomposition of the heart is to be treated as in that of non-syphilitic origin.

Early diagnosis is imperative. I feel that there should be a greater willingness on the part of clinicians to make a tentative diagnosis of specific aortitis, and a resort to a therapeutic test. Along such lines lies our greatest hope of improvement in the mortality rate of this disease.

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New Apparatus.

A HEMOSTATIC FORCEPS FOR POST-OPERATIVE TONSILLECTOMY.

By FREDERICK KINGSLEY, M.D., BOSTON.

AFTER many attempts to improve on other methods of stopping hemorrhage, I have evolved the instrument presented here. The drawings of this instrument are self-explanatory, nevertheless a brief description of its application may be helpful.

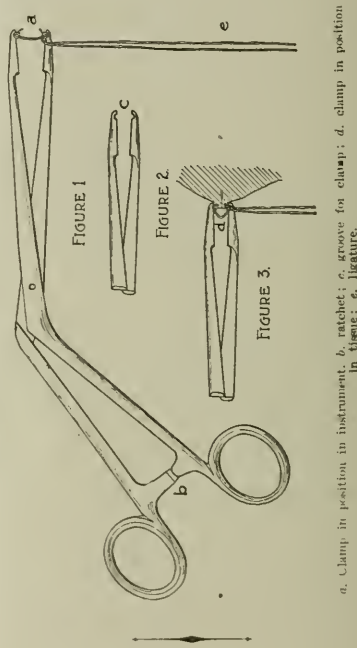
The instrument should first be prepared for use as in Figure 1. This is done by placing a clamp (a) in the groove at the distal end, then closing by scissors movement and locking by means of ratchet (b) which holds clamp firmly in position.

In applying the instrument it is important that it be placed in an easily accessible position. Then, by sponging with pressure, locate bleeding points; grasp these points with the instrument as if grasping tissue with an ordinary forceps. The more firmly the tissue is grasped the more firmly the clamp is inserted. To remove the instrument, release the ratchet, leaving the clamp in position.

To the clamp is attached a silk ligature, the other end of which is fastened by adhesive tape to the cheek, thus eliminating all danger of accident by swallowing.

To remove the clamp after all danger of bleeding is past, insert the distal end of the instrument under the clamp and spread.

The advantages of this instrument briefly are the fact that it is easily inserted, and that with it the clamp can be effectively applied at any point which can be reached by an ordinary forceps.



a, Clamp in position in instrument; *b*, ratchet; *c*, groove for clamp; *d*, clamp in position in tissue; *e*, ligature.

Book Reviews.

The Don Quixote of Psychiatry. By VICTOR ROBINSON. New York: Historico-Medical Press. 1919.

The story of *The Don Quixote of Psychiatry* reveals some phases of the early progress of this science which were encountered by Shobal Vail Clevenger, Jr., a man whose career, although constantly changing and varied, yet contributed to medical science something which a less quixotic personality might have shunned and passed unnoticed. His early life was full of hardship; at first a wanderer in different trades,—a clerk, soldier, hotel keeper, engineer,

—he finally saved enough money to start on his medical career. He attended the Chicago Medical College, and the author's description of his experiences and friends throws considerable light on medical education and student life during the nineteenth century. His early medical career reveals the conditions which then generally prevailed in our insane institutions: corrupt administration, political influence, and too often treatment actually cruel to our most helpless members of society. Clevenger served in various capacities, — pathologist, neurologist, alienist, hospital superintendent,—and took a courageous stand against the abuses with which he came in contact. Continually in opposition to political administrators, he was obliged frequently to seek new fields for his endeavor. The account of his life, as presented in this volume, has both professional and literary interest, revealing the characteristics and achievement of a man not often encountered in medical history.

Experimental Bacteriology and the Infectious Diseases. By DR. W. KOLLE, Frankfurt, and DR. H. HETSCH, Berlin. Fifth Edition. First Volume. Berlin and Vienna: Urban and Schwarzenberg. 1919.

This volume, dedicated to the memory of Robert Koch, is of interest as the first German medical work to reach this country since the close of the war, and as an example of a type of Teutonic scholarship not likely soon again to find favor among English-speaking peoples. It is the first volume of the fifth, enlarged edition of the well-known textbook by Kolle and Hetsch for students, physicians, and public health officials. It is designed with special reference to the theory of immunity, and in a series of 36 chapters deals successively with bacteriology and its technic, with methods of disinfection, with specificity, immunity, and protective inoculation, with antitoxins and other serological substances, with anaphylaxis, serum diagnosis and serum therapy, and with the infective diseases. In their preface to this edition and to the fourth, which was published in 1916, the authors refer to the difficulties which the war and the revolution put in the way of their work. Nevertheless, the entire range of German literature and the most important French, Italian, Spanish, Russian and English contributions of the period have been thoroughly reviewed: so that in this edition are incorporated particularly the advances in knowledge which have been made during and as a result of the war, especially with regard to cholera, typhus, plague, gas gangrene, influenza, meningitis, and other epidemic pestilences. The book is a useful and valuable addition to the literature of medical science. It is illustrated with seven charts, 42 colored plates, and 135 cuts in the text.

Vaccines and Sera in Military and Civilian Practice. By A. GEOFFREY SHERA (Hon. Capt. R.A.M.C.). London: Henry Frowde and Hodder & Stoughton. 1918.

An answer to those who are trying to discredit and discourage specific therapy is found in this book. The clinical value of vaccines and sera in civilian and military practice is thoroughly discussed. The merits and demerits of this line of treatment are set down and statistics are drawn from cases actually treated. Of especial interest from the point of view of the present war are Chapters X and XI, in which twenty-five different cases illustrative of the application and results of vaccine treatment in infected gun-shot wounds are submitted for judgment. The introduction by Sir Clifford Allbutt, K.C.B., M.D., F.R.S., a former teacher of the author, considers generally the possibilities which lie in vaccination. The book itself is divided into four sections. Section I—Vaccines—discusses the present position of specific therapy in disease groups. Section II—Sera—includes Anaphylaxis and Serum Disease. Filterable Viruses, Poliomyelitis, Rabies, Cerebrospinal Meningitis, Tetanus, Anthrax. Section III contains notes on special diseases of women and children, and Section IV, dealing with Autoserum Therapy and Normal Serum Therapy, includes as well a provisional classification of vaccines and sera with a glossary and complete table of references.

Psychoses of the War. By H. C. MARR, Lieut.-Col., R.A.M.C. London: Henry Frowde, Hodder and Stoughton. 1919.

One of the serious after-war problems to be met is the care of men whose minds have been injured during the war. The author of *Psychoses of the War* has endeavored to explain the causes of abnormal mental action, to describe the symptoms of disorder and disease, and to make his observation of about eighteen thousand officers and men of practical value in correcting abnormal conditions. In a general introductory section he discusses the borderland of mental disease, obsession, and simulation of mental affections. Mental affections are classified under six general divisions: neurasthenia, psychasthenia, mental deficiency (infantile), mental enfeeblement (adolescent), toxic psychoses, and organic psychoses. In the cases of several thousand soldiers, the exciting causes of neurasthenia and mental affections are analyzed. The nature of the cerebrospinal fluid and a method of examining it are discussed in the appendix. Sixty illustrations show the effects of these diseases, both in facial expression and bodily conditions.

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THE PREVALENCE OF TUBERCULOSIS IN FOREIGN COUNTRIES.

In many foreign countries, and particularly among the natives of comparatively uncivilized communities where health departments are not adequately organized for checking the spread of disease, the extent to which tuberculosis sometimes affects the inhabitants often reaches the proportions of a scourge. A European periodical, "Tuberele," gives an interesting survey of this disease in various countries of the world, including the Malay peninsula, Egypt, Spain, Austria, Scandinavia, and England. There are still countries in which tuberculosis encounters little resistance, for it is often difficult to help the people because of their fundamental fatalism. The spirit of modern medical enlightenment is beginning, however, to penetrate even the most benighted of regions, and countries which a few years ago were helpless in the event of an outbreak of tuberculosis now are becoming awakened to the dangers of the disease and are showing extraordinary zeal in building up defensive organizations against its spread.

The Malay peninsula presents an interesting situation. There tuberculosis has broken out on practically virgin soil and has become a plague. The mortality rate for Singapore in 1916 was 48.4 per ten thousand of inhabitants, the rate being nearly twice as great among males of the Chinese population as among females. In our own country, infected milk is considered one of the important sources of tuberculosis; in the Federated Malay States, however, some other cause must be sought, as bovine tuberculosis does not exist there. Furthermore, of more than two hundred and fifty thousand hogs slaughtered at the Ipoh abattoirs, not one case of tuberculosis was found. It seems evident, therefore, that the disease is not caused by infected meat, nor by milk, for the reasons that the cows are free from the disease and both children and adults seldom use milk.

In Egypt tuberculosis has become distributed, seldom affecting the lungs, but almost entirely the glands, bones, and joints. It is difficult to undertake any measures of consequence among the natives toward training them to help themselves, inasmuch as patients are imbued with the idea that the disease is a visitation from heaven to be borne with fortitude and patience. Consequently the condition of the patient is seldom really known until the disease is well advanced and treatment is of little value.

In Spain there has been awakened a considerable interest in the subject of tuberculosis. In Austria the mortality rate from tuberculosis increased during 1917. The figure in 1913 was 3 per thousand of population; in 1917 it had risen to 4.1 and by 1918 to 4.2. The ratio in 1913 was three women to four men, while in 1918 these rates were practically reversed. Among young women the increase was about 113 per cent., among children, 186 per cent. Statistics show further increase in the general rate during the first half of 1919.

About a decade ago, there was initiated in Finland against tuberculosis a campaign which

included the entire parish. The people were examined and given instructions in regard to methods of combating the disease; laboratory work was undertaken and efforts were made to trace the sources of infection. A second complete examination was made of the whole population last year and the figures offer interesting comparisons. In 1909 there were 28 per cent. of the families with tuberculosis; in 1919 the corresponding figure was 14.6. In 1909 the incidence among the 3200 persons in the parish was 6.2 per cent., now fallen to 2.8 per cent.; among young people in the age group eleven years to twenty, the decrease was from 8.9 per cent. to 2.6 per cent. The experiment showed the advantage of combating tuberculosis in the younger age groups. During recent years in the Scandinavian peninsular attention has been given to the sociological aspect of tuberculosis. Efforts to secure coöperation in research were interrupted by the war, but they have been resumed. In that country the sun is considered as a therapeutic factor of importance, and its substitutes, the electrical arc light and the quartz-mercury light, are used to a considerable extent.

A review of the situation in England shows that before the war tuberculosis administration had been developing and was becoming of great value in the matter of public health. As notification of tuberculosis did not become compulsory until 1913, it was still in its initial stages at the outbreak of the war; but communities were aroused to the importance of the subject and plans were being made on a large scale for the treatment and control of the disease. With the opening of the war the tuberculosis mortality rate in England began to turn from a steadily descending curve to a rising one. The figures for women were approximately seven per cent. higher in 1916 than in 1913, and in 1917, 13 per cent. higher, due in part, of course, to the extension of industrial instead of domestic pursuits. Examination of the total male population for military purposes revealed for the first time the real conditions, and furnished an important and reliable basis for future public health work. What has been discovered under the stress of war conditions should lead nations in all parts of the world to a realization of the need of complete tuberculosis surveys and the establishment of competent organizations to deal with this important health problem.

THE PALMER MEMORIAL.

AMONG the many demands for help for new endeavors, let us not forget the old. An article in the *Transcript* putting forth the needs of the new home for incurables to be carried on by the New England Deaconess Association, under the name of the Palmer Memorial, leads one to suppose that the sufferer for whom the new home is named spent her last days without that kindly care which only a hospital can afford. As a matter of fact, she died at the House of the Good Samaritan, where she had been a patient from August 11, 1918, to April 1, 1919.

During the year 1919, two hundred and fifty-four cases were cared for as in-patients by this institution. Until the Palmer Memorial Home was opened, the House of the Good Samaritan was the only non-sectarian hospital, exclusive of state and city institutions, such as Tewksbury and Long Island, where incurable cases without funds could be taken. In the annual report for 1919, the secretary of the House of the Good Samaritan makes an appeal for assistance, not only to maintain the beds already in operation, but to add facilities to care for children who, after contagious diseases, are left with weak hearts.

The community should support to its very limit such enterprises as these. The cost of maintenance per bed is small, compared with that in hospitals for the more acutely sick, and from the humanitarian point of view, the money is nowhere better spent.

A CORRECTION.

WE regret that several errors occurred in the editorial account in the JOURNAL of July first of the recent meeting of the Massachusetts Medical Society. The meeting of the Council was on June 8 and the report of the proceedings was published in the JOURNAL of June 24. The title of Dr. Cabot's annual discourse, which was published in the JOURNAL of June 10, should have been "Compulsory Health Insurance, State Medicine or What?" The Shattuck Lecture and the Proceedings of the Society were published in the JOURNAL of July 1. The main title of the play given after the annual dinner was "Breaking into the Army." There are two Doctors Fred-

erick E. Jones in the Massachusetts Medical Society; Dr. Jones who has been elected vice-president is the one who lives in Quincy.

MEDICAL NOTES.

STUDY OF PUBLIC HEALTH SERVICE FOR BRAZIL.—A commission has been granted Dr. A. Neiva, chief of the Public Health Service of the State of St. Paulo, Brazil, for the study of the organization of the Public Health Service in Japan and in the United States, and also of the prophylaxis of leprosy in Norway, the Philippines, and Hawaii.

ELECTION OF DR. MILTON C. WINTERNITZ.—Dr. Milton Charles Winternitz has been elected dean of the Yale School of Medicine, to succeed Dr. George Blumer. Dr. Winternitz became a member of the Yale faculty in the fall of 1917 as Professor of Pathology.

APPOINTMENTS AT WASHINGTON AND LEE UNIVERSITY.—The following appointments have been announced at Washington and Lee University: L. J. Desha, Ph.D., formerly professor of chemistry in the Medical College of Tennessee, has been elected professor of chemistry; W. D. Hoyt, Ph.D., formerly associate professor of biology has been made professor of biology and head of the department.

AWARD OF HONORARY DEGREE TO DR. SIMON FLEXNER.—An honorary degree of Doctor of Laws has been conferred upon Dr. Simon Flexner of New York, director of the Rockefeller Institute, by Cambridge University.

DECREASE IN POPULATIONS OF FRANCE AND PRUSSIA.—Official tabulations which have been published recently indicate the comparative decrease in the civil populations of France and Prussia during the past few years. From July 1, 1914, to June 30, 1918, the population of the uninvaded part of France (33,000,000) diminished by 993,440, and that of Prussia (42,000,000 inhabitants) diminished by 312,827. With a population of nine million less than Prussia, France, therefore, suffered a decrease three times as great. Considering the invaded departments, where the birth rate was about zero and the death rate very high, the decrease of the French population appears even much greater.

INFANT MORTALITY STATISTICS.—Statistics announced by the Census Bureau show that infant mortality rates for 1919 decreased materially as compared with the four previous years. Of the twelve largest cities in the birth registration area seven showed decreases of from 8.4 to 23.4 per cent., while the highest increase was 3.6 per cent. In New York city the death rate of infants under one year of age decreased eleven per cent., as compared with 1918, and was 18 per cent. below the figure for 1915.

A DISTINGUISHED PHYSICIAN.—The late Dr. Charles Daniel McCarthy, former mayor and physician, was said to be "Malden's most useful citizen." Perhaps no worthier distinction could be conferred upon a man, however famous. Dr. McCarthy is remembered as a good and kindly man and a skillful doctor and surgeon, loved and trusted by all. It is said that he never made out a bill for his services during his entire professional career, but permitted his patients to give him what they thought they could afford and often took nothing when he knew that financial resources were very limited. He served his city and his patients in many ways, professional and otherwise.

INSTITUTE FOR TRAINING NUTRITION WORKERS.—Intensive courses for training workers in nutrition clinics have been held recently in Chicago and Atlanta. In the former city the work is given in coöperation with the Elizabeth McCormick Memorial Fund which is under the direction of Mrs. Ira Couch Wood. A class of thirty was held, including dietitians, school nurses, four physicians, two members of school boards and the executives of various child-helping organizations. Seven states were represented in the group. The work consisted of actual participation in their activities; also of lectures, conferences, class discussions and reports. The institute was conducted by Dr. Wm. R. P. Emerson, who was assisted by Miss Mary Murphy, assistant director of the fund, and Miss Michael, nutrition worker in charge of the Chicago Nutrition Classes.

The course at Atlanta was given under the auspices of the Southern Division of the American Red Cross and was attended by representatives of fourteen states. Nearly half the

members were workers in the Home Economics Section of the United States Department of Agriculture. The work is under the direction of Miss Mary Arthur, chief dietitian. Miss Warren and Miss Moseley were sent down as advance workers to weigh and measure children and organize clinics. Five hundred children in the various school grades and in one of the city orphanages were examined. The percentage of malnutrition was found to be nearly double that usual in Boston, New York and Chicago, reaching as high as 61% in the Girls' High School and 71% in a colored group.

The instruction was given by Dr. Emerson, assisted by Miss Mabel Skilton, who has charge of field work in Nutrition Clinics for Delicate Children. The six clinics established in this connection will be continued by the Red Cross.

Similar nutrition clinics are to be established this summer in Labrador under the direction of Dr. Grenfell's unit. These are to be in charge of Miss Moseley and Miss Fuller, who were members of the spring institute held in Boston and who have been since its close volunteer workers in Dr. Emerson's nutrition clinics.

Award to Physicians of Honorary Degrees.—A number of eminent physicians have received honorary degrees this year from American universities. The following degrees were awarded by Harvard University.

To Robert Somers Brookings, LL.D.—"A patron and pilot of Washington University, its Medical School, and many other enterprises of great pith and moment; a philanthropist, generous and clear-sighted."

To William Williams Keen, Sc.D.—"A surgical officer in the Civil War, the Spanish War, and the World War—a man whose career in his profession has been one of long and ever rising distinction; the dean of American surgery."

To Hermann Michael Biggs, Sc.D.—"Pathologist and physician; guardian of the public health; who, by his combat with tuberculosis in New York, has rescued countless lives."

To Eugene Hanes Smith, A.M.—"Dean of the Harvard Dental School, who, undaunted by its slender means, has by his devotion through a quarter of a century constructed its building and led the school to the high position that it holds."

An honorary degree of Doctor of Science was conferred upon Alexis Carrel of the Rockefeller Institute, New York, by both Princeton and Brown Universities. Yale University awarded to William Darrach, dean of the medical faculty of the College of Physicians and Surgeons in New York, the degree of Master of Arts.

Buffalo Department of Health.—The annual report of the Department of Health of Buffalo, New York, for the year ending December 31, 1919, states that the death rate for the year was 15.30 per thousand, figured on an estimated population of 475,781, an estimate which it is believed is probably at least 25,000 too low. During the year 1919 there were 12,708 births, making a birth rate of 26.70 per thousand. A considerable number of the deaths were due to influenza and diphtheria. The type of diphtheria was entirely different from any experienced before, both in extent and virulency. There were only 34 deaths from typhoid fever during the entire year. Considerable progress has been made both in the care and treatment of tuberculosis and in the number of cases and deaths, the latter being lower than at any time for years. The total number of new tuberculosis cases reported during the year was 1,301.

The Urologic Division of the Health Department of Buffalo has been particularly active, having given treatment to the following number of cases in health centers, free dispensaries, and clinics during the year: gonorrhea, 2,970; syphilis, 3,151; gonorrhea and syphilis, 211; chancroid, 126; making a total of 6,460. The Wassermanns and the smears by the Department of Health Laboratory showed that 11,082 were examined for syphilis, of which 1,799 were positive and 9,285 negative; 1,879 smears were examined for gonorrhea, of which 562 were positive and 1,317 negative.

The Bureau of Child Hygiene has been active in schools and dispensaries, and considerable work has been done in social service, prenatal work, and work among children of preschool age. During the year approximately 30,000 school children were vaccinated. By the city laboratory 99,460 examinations were made in 1919, compared with 20,467 made in 1910. The Bureau of Foods and the Divisions of Animal Industries and Commercial Industries have supervised and regulated milk and food supplies. The Bureau of Sanitation has encountered many difficulties in administering

the State Tenement House Law because of the demand for dwellings far exceeding the available supply. The work of the bath houses and laundries has given material help to thousands of men, women, and children who would otherwise be obliged to dispense with this important feature of sanitation.

One of the most important educational features added to the work of the Health Department has been a motion picture machine adapted for slides and films. A film showing the origin and history of venereal diseases has been of benefit to many audiences.

The Tuberculosis Division of the Department of Health has furnished milk and eggs free to those tubercular cases requiring this special food and unable to purchase it. The department also purchased sugar and distributed it at cost to families requiring it for babies.

INCREASE IN NOTIFIABLE DISEASES IN ENGLAND.—A regulation has been issued recently by the British Ministry of Health increasing the number of diseases required to be notified to the local medical officers of the health. Among the additional diseases now required to be reported are ophthalmia neonatorum, acute encephalitis lethargica, malaria, dysentery, trench fever, acute primary pneumonia, and acute influenzal pneumonia.

DRUG PRICE CHANGES.—The following announcement has been made by the Drug and Chemical Markets for the week of June 30: There is a well-defined movement toward lower prices in the fine chemical market. Morphine and minor morphine products have been reduced unexpectedly by makers. Refiners of camphor also announce a reduction in price. Menthol is weak and lower. Refined sulphur is higher. Chloral hydrate has been advanced, and caffeine is scarce and firm. Citric and tartaric acids are dull.

Lemon and orange oils are lower in primary markets. It is said that reports of short crops of flowers in Southern France have been confirmed, and geranium and neroli oils are expected to advance in price. Other crops are ample, however, and essential oils dependent upon these supplies are lower.

Linseed oil is weak. Cottonseed oil is slightly lower. There is a downward tendency in castor oil, cocoanut oil, olive foots, refined rapeseed, and crude soya bean oil. Turpentine is lower. Menhaden crude oil and Newfoundland cod oil are lower.

Offers of new crop materials, both foreign and domestic, continue to weaken the crude drug market and especially botanicals. Mandrake root is still declining. Arnica flowers are weak and lower. Alkanet prices continue to decrease. Cloves, poppy and celery seeds and Belgian valerian are lower.

Naphthalene and betanaphthol continue scarce. Other coal-tar crudes are also firm in price. Aniline oil is weak. There has been some shading in sales of paranitraniline. Albumen is weak.

PROPOSED HOSPITAL FOR AMERICANS AND EUROPEANS IN THE PHILIPPINES.—The closing to Americans of St. Luke's Hospital in Manila has prompted Americans and Europeans of the Philippines to conduct a campaign to raise five hundred thousand dollars with which to establish a hospital for their exclusive use. About one-third of the sum needed already has been pledged. With the progress and advancement of the Filipinos has come a stronger demand for hospital treatment among the natives, and the Philippine General Hospital now is occupied with the treatment of Filipino patients to such a degree that there s very little room left for Americans. Furthermore, as it is under Filipino supervision and management, and its accommodations therefore are made to fit the demands of the natives, the diet and service are not exactly suitable to Americans. St. Luke's Hospital is a mission institution established and maintained primarily for Filipinos, and when it became impossible to care for all who applied for admission, Americans were turned away in order that the Filipinos might be served more adequately.

SCHOOLS FOR THE TRAINING OF HOSPITAL ATTENDANTS.—In view of the difficulty which the city of New York has had in obtaining the services of trained hospital attendants, four training schools for such attendants have been established by the Commissioner of Public Works. These schools are at the City Neurological Hospital, Blackwell's Island; the New York Children's Hospital, Randall's Island; the Sea View Hospital, Staten Island, and the Greenpoint Hospital, Brooklyn. The pupils are being instructed in the principles of hospital treatment and in the care of simple sick

and chronic cases. The establishment of these schools should result in a higher type of hospital attendant and also relieve the nursing situation. In many chronic and convalescent cases the trained attendant may serve adequately and thus release many more skilful nurses for other work. As the compensation of attendants will be lower than that required for the graduate nurse, many families who otherwise would be unable to afford competent nursing aid will be in a position to secure the services of the trained hospital attendant. Their instruction will be along broad and useful lines, with opportunities for advanced and specialized training if it is desired.

BOSTON AND MASSACHUSETTS.

BEQUEST TO LYNN HOSPITAL.—A bequest of three thousand dollars was provided for the Lynn Hospital in the will of the late Mr. Edward C. Smith of Lynn.

MASSACHUSETTS STATE DRUGGISTS' ASSOCIATION.—At the convention of the Massachusetts State Druggists' Association held on June 23 and 24 at the New Ocean House, Swampscott, it was voted to send a resolution to Congress and to Mr. J. F. Kramer, national prohibition commissioner, requesting a modification of some regulations under the Volstead Act. At present a druggist must have a retail liquor dealer's license in order to mix drugs containing alcohol.

ORGANIZATION OF THE BOSTON HEALTH LEAGUE.—There was organized on June 30 the Boston Health League, with Dr. William C. Woodward, President; Rev. Michael J. Scanlon, Vice-President; Ellen T. Emerson, Secretary, and James Jackson, Treasurer. On the executive committee were elected Dr. William E. Ladd, Dr. Robert B. Osgood, Louis Kirstein, Miss Katherine B. McMahon, Miss Mary Beard, Seymour H. Stone, and Miss Winifred Rand.

The purpose of this league is to improve the health of the community by better coöperation and coördination among existing agencies, and the further development of that work. The following agencies have agreed to assist in making this plan effective: Boston Metropolitan Chapter, American Red Cross; Instructive District Nursing Association, Jewish Maternity Clinic Association, Massachusetts Society for Social Hygiene, Boston Consumptive Hospital trustees, Baby Hygiene Association, Floating Hospital, Massachusetts General Hospital, Social Service Department; Dietetic Bureau Boston Public Schools; Department of Medical Inspection; Boston Dispensary, Women's Municipal League, Public Health Department, Children's Hospital, and Massachusetts Homeopathic Hospital.

NEW ENGLAND NOTES.

WAR RELIEF FUNDS.—The New England branch of the French Orphanage fund has announced contributions to a total amount of $604,032.64. The sum of $359,871.29 has been acknowledged by the French Wounded Fund.

CLINICAL MEETINGS IN NEW ENGLAND.—At a meeting in Boston on June 27 of the State sections of the Clinical Congress of the American College of Surgeons, plans were made for holding clinical meetings in Massachusetts, Rhode Island, and Connecticut, to be followed by meetings in which the laity in the three states will be invited to attend.

The following officers were elected for the Massachusetts section: Chairman, Dr. F. J. Cotton; secretary, Dr. Charles F. Painter; counsellors, Drs. R. H. Seelye, Springfield; E. L. Hunt, Worcester; S. W. Goddard, Brockton; Dr. R. Hammond was elected chairman for Rhode Island, and Dr. A. N. Allen for Connecticut.

Obituary.

FRANK BYRON BROWN, M.D.

DR. FRANK BYRON BROWN died of apoplexy at his home in Dorchester July 1, 1920, at the age of 56 years.

The son of David T. and Julia Clark (Prescott) Brown, he was born at North Chichester, N. H., September 3, 1863. After attending the schools of his native town and Pittsfield and Pembroke academies he entered Dartmouth College with the class of 1886, transferring to the Medical School of Maine (Bowdoin) and graduating there in 1887. Dartmouth conferred the A.B. degree on him in 1911 as of the class of 1886.

Dr. Brown practised at Salina, Kansas, from 1887 to 1892, when he settled in Dorchester, joining the Massachusetts Medical Society the

following year and becoming at that time instructor in bacteriology and assistant in pathology in Tufts College Medical School. He held this position until 1898, when he resigned to devote himself to general practice.

Dr. Brown was never married and left no near relatives.

Correspondence.

A REPLY TO DR. CHRISTIAN.

Mr. Editor:—

My attention is called to the publication, in your issue of May 20, 1920, of a letter addressed to me by Dr. Henry A. Christian, which appeared in the public press simultaneously with its receipt by me. In justice to everybody concerned I am sure you will be glad to publish my reply. The correspondence closed with Dr. Christian's reply to this letter as it covered practically the same ground as his first letter.

You will permit me, perhaps, to add that anyone who wishes to see the letters received in answer to the inquiry as to present medical practice in prescribing alcohol as a preventive of or remedy for influenza will find them all in the February number of the *Scientific Temperance Journal*. As was to be expected, they represent various viewpoints. Their collection and publication under these circumstances can hardly be considered "agitation either for or against the medical use of alcoholic beverages in the treatment of disease," but rather precisely what we sought in the first place—a cross-section of present medical views and practice as to the particular question submitted. The larger part of Dr. Christian's letter was devoted to another question: the legislative control of medical use of alcohol, which, while important in itself, was not the subject immediately under consideration.

CORA FRANCES STODDARD.

Boston, Mass., June 25, 1920.

COPY.

February 9, 1920.

Dr. Henry A. Christian,
Peter Bent Brigham Hospital,
Boston, Mass.

Dear sir:—

Your letter of February fourth is received. I should not trouble you with a reply except for the fact that it seems to be based on the assumption that the Scientific Temperance Federation is proposing to advise the public whether alcohol should or should not be used as a medicine. As far as I am aware, no publication or spoken word from the Scientific Temperance Federation has ever done this, for the excellent reasons that we are quite aware that there is still a difference of opinion among physicians on this matter, and, further, are in entire accord with your first proposition that the medicinal administration of alcohol should be determined by the physician.

Allow me, however, closely to link with these statements certain other facts of which you must be cognizant:

(1) There is still an idea widely entertained by the non-medical "laity" that alcohol is a valuable remedy to be kept on the home medicine shelf for any emergency; (2) the liquor interests of the entire world (and I use this phrase "entire world" advisedly) have endeavored to bolster up the liquor traffic by pushing forward extravagant claims for the use of alcohol in influenza. We all recall what happened in this respect in this city last year when health officials were made to appear favorable to the distribution of liquors for this purpose and were compelled to issue statements of the misrepresentations that had been made.

The general public, therefore, is entitled to know the facts as to the medicinal use of alcohol at the present time. The position which the Scientific Temperance Federation has always taken and will continue to take is to say this:

1. All physicians would agree that if alcohol is to be given in the treatment of disease its use should be determined by the competent physician who knows why he is using it, what he wants to accomplish by it, just as is the case with other drugs. Alcohol is not a remedy for self-prescription any more than any other drug.

2. Practically all physicians use far less alcohol in the treatment of disease than formerly. Hospital statistics, of course, show this. A letter from Dr. George W. Gay of this city, dated February 5, volunteered the information that "only about one-tenth of the amount of alcoholic liquors is used in our large hospitals in the case of the sick and injured as was the case when I began the practice of medicine half a century ago."

3. There is an increasing number of physicians who do not prescribe alcohol at all, because they are convinced (to use the words of the resolution adopted by the House of Delegates of the American Medical Association in 1917) that the use of alcohol in medicine "as a tonic or stimulant or for food has no scientific value" and "that the use of alcohol as a therapeutic agent should be further discouraged." Such physicians would probably agree with the action of the last Pharmacopeial Convention in dropping whiskey and brandy from the United States Pharmacopeia which leaves physicians liberty, of course, to use them as "non-official" drugs.

These facts the public is entitled to know to offset the old ideas of lay administration of alcohol and the advocacy of medical use by the liquor interests through clever propaganda.

In the present instance, under the circumstances of this continued propaganda for whiskey in the treatment of influenza, the same public is, I believe, entitled to know that, in general, physicians do not regard the use of alcohol as a preventive of influenza, but rather likely to predispose the user to infection; that physicians believe that the administration of alcohol in influenza should be decided by the physician; that while there are physicians who in special circumstances do carefully prescribe alcohol in some form there are many in this city and in other cities who do not use it. Such physicians apparently act on the basis of opinion expressed in a letter received this morning from Dr. J. W. Schereschewsky, Assistant Surgeon-General of the United States Bureau of Public Health Service, who writes:

> "In reply to your letter of January 30, it is desired to state that in the opinion of this Bureau alcoholic liquors can be regarded neither as a preventive nor a cure for influenza. This Service does not encourage the therapeutic use of alcohol except in special instances as it is believed that in the greater number of instances better results are secured from drugs other than alcohol."

In regard to your criticism of the legislation on this question, in which you express the opinion that the temperance organizations are to blame for not providing for machinery to become immediately effective whereby alcohol could be readily obtained, may I remind you the enforcement bill was before Congress for at least four months before it was enacted, possibly longer. Delay in setting up enforcement machinery lies, therefore, with Congress, not with those who introduced the bills. Second, the bill placed the handling of alcohol as a drug in the hands of those naturally situated in a position to deal with

it most intelligently—the druggists and physicians. Physicians are not only permitted to prescribe up to one pint a week, but by the regulation issued under the law, they are allowed to purchase during the year a quantity up to six quarts of liquor which they can administer when they deem it necessary.

Some limitations had to be placed somewhere. If the present arrangements prove not to work satisfactorily, I feel confident that *constructive* suggestions from the medical profession as to how alcohol which they desire to use can be obtained with due regard to preventing beverage use, will be welcomed.

Sincerely yours,

(Signed) CORA FRANCES STODDARD.

REPORTABILITY OF LETHARGIC ENCEPHALITIS.

Boston, June 28, 1920.

Mr. Editor:—

Early in 1919 the question of the advisability of making lethargic encephalitis reportable was considered by this Department. An investigation and study of the circumstances affecting this proposal were made by the Committee on Preventive Medicine of the Department (contisting of Dr. David L. Edsall, Dr. J. E. Lamoureux, Dr. William J. Gallivan and myself) and as a result thereof it was the opinion of the committee "that it was not desirable at present to add this disease to the list of those dangerous to the public health, because, in the first place, the number of cases of the disease is likely to be very small; in the second place, it has been the experience elsewhere that if the disease occurs at all, its duration is transitory; in the third place, the diagnosis is so difficult to make that the cases reported under this heading would probably cover a wide variety of conditions ranging from tuberculous meningitis to uraemia, and not lethargic encephalitis; and in the fourth place, making this disease reportable would be likely to cause unnecessary public alarm." In view of this opinion, the Department decided that lethargic encephalitis be not added to the list of reportable diseases.

The Committee, however, recommended as an alternative measure that an intensive study be made as to the actual occurrence of the disease, in order to define, if possible, true cases of lethargic encephalitis from other conditions which might simulate it, and steps were taken by the Department to carry out this plan.

Recently, however, the matter of making lethargic encephalitis reportable again became the subject of considerable discussion. The opinion of the Department, as expressed above, remained the same, but was of course, open to conviction. Therefore, on May 15, 1920, the Department requested the Executive Committee of the Massachusetts Association of Boards of Health to confer with it and to make known its views on the matter of having lethargic encephalitis placed on the list of reportable diseases. Following this conference, the Executive Committee of the Association voted "to recommend to the Department of Public Health to request all doctors to report to local boards of health all suspected encephalitis cases, that they may start investigations of such cases."

As stated above, this Department does not deem it desirable or necessary to add lethargic encephalitis to the list of reportable diseases at the present time, but, in conformance with the expressed request of the Association of Boards of Health, the Department does wish to request that physicians report voluntarily to the Department all cases or suspected cases of lethargic encephalitis in order that such cases may be carefully investigated and studied with a view to adding to the present fund of knowledge concerning this disease.

Therefore, it will be very much appreciated if you will give this letter such publicity as you consistently can in the next publication of your JOURNAL, in order that the coöperation of the physicians of Massachusetts may be enlisted in this plan.

Thanking you for your assistance in this matter, I am

Yours very truly,

EUGENE R. KELLEY,
Commissioner of Public Health.

THE CONTROL OF INFLUENZA.

Philadelphia, June 16, 1920.

Mr. Editor:—

The article entitled "An Exploit in the Control of Influenza," published in your issue of June 10, by Dr. J. Madison Taylor, is suggestive in many particulars. Two of the seventeen preventive measures carried out by Admiral Goodrich and his medical officers appear to me, however, subject to comments of sufficient importance to suggest that a perfectly clean bill of health might have resulted instead of "*few* cases of influenza, *fewer* still of pneumonia" had the data submitted in this letter been available at the time.

To discuss the prophylaxis of influenza and its treatment is opportune, for influenza is said to be endemic in Petrograd and Moscow, and the sanitary control of those cities has been such the last two years as to suggest, owing to the steadily increasing transportation facilities, the possibility of another pandemic next year. In view of this fact, I beg leave also to submit a few lines of thought based on a comprehensive study of the disease (see *New York Medical Journal*, May 15, 1920), for at no time has the knowledge of its pathogenesis and medical control been at a lower ebb, notwithstanding the immense labor devoted to all phases of the question by our ablest investigators.

The two features enumerated by Dr. Taylor that I would modify are No. 4, which states that "every man entering from abroad was sprayed as to mouth, nose, and throat," and No. 8, which reads: "Walking cases played on the baseball field all day." To make this clear, however, the newer views referred to above must be briefly reviewed.

My investigations showed that the Pfeiffer bacillus was the true pathogenic organism of influenza but that it did not act in accord with Koch's postulates. I found that it was *in the pulmonary alveoli, which present all conditions for the growth of the Pfeiffer bacillus, hemoglobin, oxygen, and temperature, that its colonies were developed* precisely as they are in the laboratory, and that these colonies caused therein lesions which led me to identify the disease as a *pulmonary necrotic alveolitis*. That these air vesicles are deeply involved is well shown post mortem. Dr. F. P. McNamara, for instance, who described ninety-five autopsies at the U. S. General Hospital No. 6 by Prof. Winternitz of Yale, in the BOSTON MEDICAL AND SURGICAL JOURNAL of February 20, 1920, wrote: "The most striking picture and one that is *peculiar to this disease* is the hyaline necrosis involving only the terminal bronchioles and alveolar walls." The cyanosis, upon which so many internists lay stress, and so intense in some cases in my service in the Emergency Hospital No. 2 during the 1918 epidemic, as to give the body a bluish-black color, point clearly also to an asphyctic condition which widespread destruction of the air vesicles clearly explains.

Further study then showed that we were protected to a degree at first estimated at 60% and then (in a report to the French Government, requested by M. Jusserand, June 3, 1920) at 80%, after revision of data, by the nasopharyngeal defences and the ciliated epithelium of the respiratory tract down to the terminal lobules. So perfect is this nasopharyngeal barrier that moderately contaminated air is found completely sterilized after passing through it. This explains the negative results obtained by practically

all investigators who attempted to provoke the disease by injecting B. influenzae into the nasal cavities. The germs were destroyed by phagocytes and the mucus of the respiratory passages long before they could reach the alveoli, which alone in the whole tract afforded the conditions necessary for their growth.

Under these conditions are we affording protection by "spraying the nose and throat" as advised in the fourth indication of Dr. Taylor's paper? This is where an important lesson contributed by the World War counsels prudence: It was found that antiseptics, including the newer ones, in solutions sufficiently strong to kill bacteria, also killed tissue cells. In the nasopharyngeal passages, therefore, if antiseptic solutions are too weak they are useless; if strong enough to destroy bacteria they do harm by inhibiting the local protective functions. Other data showed, however, particularly Lambert's experiments, that while *iodine* was very active as a sterilizer in a 1-2000 solution, it promoted cellular activity. Pharmacology also teaches that iodine is the specific excitant of lymphoid tissues, and therefore of phagocytosis. Briefly, our main object should be, from my viewpoint, in influenza as well as in other diseases in which the infection occurs through the nose, throat, and mouth, to employ agents which tend to *enhance the defensive activity of the respiratory tract* instead of those which, aimed at the bacteria only, also kill tissue cells. The war showed, in fact, that immunity was conferred upon workers exposed to certain gases, in hardly perceptible proportions, chlorine, sulphur dioxide and nitrous oxide, for instance, while influenza was reigning all around the manufacturing plants.

Personal tests, however, showed that even a 1 to 2000 solution caused too much discomfort to be used in the nasal cavities, but that iodine fumes greatly diluted with air, *e. g.*, evolved by heating, then mixed by means of a fan in the proportion of 0.65 gram of crystals, with about 40 cubic meters of air (the size of an average small room) could be inhaled comfortably without irritating the conjunctiva, a sensitive test indicating that the right proportion is not being exceeded. The use of pure iodine fumes evolved by heat directly into the nasal cavities is not only painful but dangerous. Conversely, the weak dilution in air, inhaled while merely sitting in the room, presents the advantage of reaching all parts of the respiratory tract down to the alveoli. As protective agent, iodine is superior to any of the gases evolved in the manufacturing plants, referred to above, and which, as shown by Shuffelbotham, caused a marked decrease of the pharyngeal flora lasting 24 hours after exposure to the gases.

Where for some reason iodine cannot be used, and excitation of the respiratory lymphoid tissues and mucosa be our main purpose, other organic excitants are at our disposal, notably turpentine fumes, also found to immunize workmen in plants using it. The volatile oils, such as eucalyptus, sassafras, etc., might be found experimentally to suffice. A feature worth emphasizing in this connection is that such fumes, used in theatres, schools, churches, barracks, hospitals, cars, and other places where many persons congregate, make it possible for them not only to be kept open during an epidemic, but to serve as *sterilizing and immunizing centers* for the bulk of the population.

The objection to Dr. Taylor's eighth feature, "walking cases" being allowed to play baseball, etc., suggests itself in the light of the above remarks. The familiar fact that young men between 20 and 30 years are by far the preferred victims is readily explained when we take into account their powerful respiratory activity, which causes air contaminated with the Pfeiffer bacillus to reach the alveoli rapidly, *i. e.*, before sterilization of the air can have been completed in their air passages. Baseball and any other violent exercise, and even drilling, as personally observed, can only increase the danger. Again, we know that leaving the sick bed too soon is usually followed by another and often fatal attack of the disease. With numerous alveoli as the seat of active colonies, perfect quiet in bed, by insuring slow respiration, enables the expired air to be sterilized. If, conversely, the patient arises too soon, the increased respiratory activity prevents complete sterilization of the expired current and the inspired current thus carries active germs back to a multitude perhaps of previously unharmed alveoli, thus starting the disease anew—a true autoinfection.

I must crave your indulgence for the length of this letter, on the plea that, while the routine methods of our day, particularly Koch's postulates, have been so sterile in results and have entailed millions of deaths, the newer views submitted seem promising in view of the readiness with which they explain many hitherto obscure facts of fundamental importance.

CHARLES E. DE M. SAJOUS.

A PHYSICIAN IN THE STATE SENATE.

Worcester, Mass., July 8, 1920.

Mr. Editor:—

May I suggest to the members of the Massachusetts Medical Society, through your columns, that anything they can do to promote the election of Dr. William L. Johnson of Uxbridge to the State Senate will be a help to sane medical legislation during the coming session of the Legislature.

We need a physician in the Senate.

It was my fortune while president of the Society and *ex-officio* chairman of the Committee on State and National Legislation, frequently to meet Dr. Johnson, at that time House chairman of the Committee on Public Health.

He was fully alive to the needs both of the profession and the public on health matters and I never knew him to be on what a physician would call the wrong side of proposed legislation. He was energetic, had great influence with his fellow members on medical matters, and should he be nominated and elected to the Senate would, I believe, have equal influence in that body. Very sincerely,

SAMUEL B. WOODWARD, M.D.

RECENT DEATHS.

MAJOR-GENERAL WILLIAM G. GORGAS, former Surgeon-General of the United States army, died at the Queen Alexandra Hospital, London, on July 4. General Gorgas arrived in London from New York on May 19, on his way to West Africa, where he was obliged to abandon his trip because of a stroke of apoplexy, and from the middle of June there was little hope of his recovery. The ultimate cause of his death is believed to have been Bright's disease. Every facility was afforded by the British military authorities for his proper medical treatment and attention.

DR. ERNEST K. PARKER died in Springfield on July 8. Dr. Parker had practised in Springfield for 25 years, specializing in nerve and skin diseases. He is survived by his widow and by several brothers.

DR. WALTER W. SCOFIELD died at his home in Dalton, July 6, 1920, at the age of 66. He was born in Albany County, N. Y., and was a graduate of the Albany Medical College in 1882. Settling in Dalton, he joined the Massachusetts Medical Society in 1885, and had practised there since. He was a councilor of the Berkshire District Medical Society for many years and was president of that society in 1899 and 1900. He was a Mason and a trustee of the Methodist church. His widow and one son survive him.

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